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ABSTRACT

Education reform, besides focusing on teaching and learning, must also address the need to maintain a safe, secure, and healthy school environment. As outlined in "A New Compact for Learning," the New York State Education Department and New York educators are responsible for ensuring the safety of school buildings. Students in school buildings are not covered by the laws that regulate the health and safety of workplace environments. Also, there are no provisions in law for a parent's or student's "right to know" about hazardous conditions in their school environment. The Regents Advisory Committee on Environmental Quality in Schools was created to develop recommendations for policy and action to improve the environmental quality of schools. This document presents an overview of the environmental quality of schools in New York and committee recommendations. The introduction presents an overview of conditions in school buildings that threaten students' health: asbestos, electromagnetic fields, hazardous materials, indoor air quality, lead, pesticides, and radon. The second section provides information about the Regents Advisory Committee and its members. Section 3 offers the committee's 16 detailed recommendations for meeting environmental standards in public schools. Appendices contain: (1) a legal analysis by the State Education Department Office of Counsel and appropriate sections of education law governing environmental health issues; (2) the legal and fiscal implications of the proposals of the Regents Advisory Committee on Environmental Quality in Schools prepared by the State Education Department; (3) an October 1993 report on environmental quality in schools; and (4) a summary of recommendations derived from public hearings on the environmental quality of schools. (LMI)

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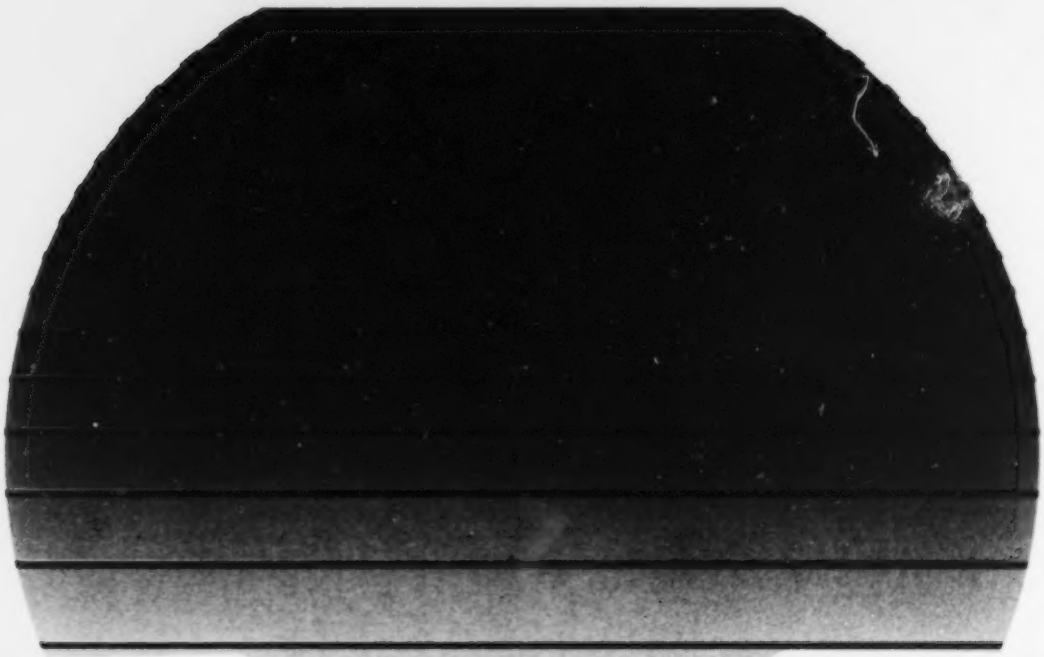

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REPORT TO THE NEW YORK STATE BOARD OF REGENTS ON THE

ENVIRONMENTAL QUALITY OF SCHOOLS

REGENTS ADVISORY COMMITTEE ON ENVIRONMENTAL QUALITY IN SCHOOLS

The University of the State of New York • The State Education Department

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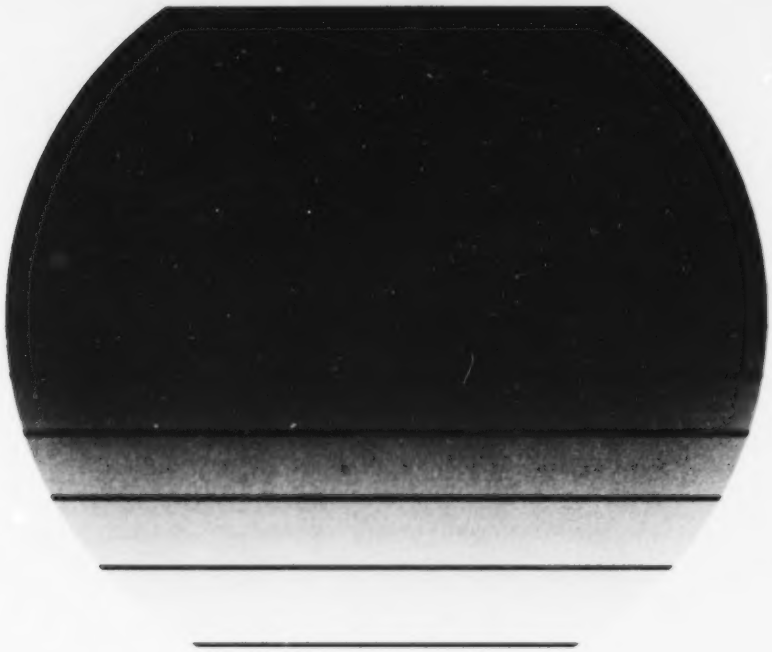

REPORT TO THE NEW YORK STATE BOARD OF REGENTS ON THE

ENVIRONMENTAL QUALITY OF SCHOOLS

REGENTS ADVISORY COMMITTEE ON ENVIRONMENTAL QUALITY IN SCHOOLS

1994

The University of the State of New York • The State Education Department

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I. INTRODUCTION

Although focused on teaching and learning, education reform must also address the need to maintain a safe, secure, and healthy school environment. The capacity of children to learn is impeded if their school environment contains elements which are hazardous to their health. As envisioned in *A New Compact for Learning*, the State Education Department and educators throughout the State of New York have a responsibility to assure the school community and the public that, based on the best available knowledge, school buildings are safe, healthy, clean, and in good repair.

The *Regents Bill of Rights for Children* and policy statements on early childhood education and parent partnerships emphasize the right of children to a safe and healthy learning environment and the responsibility of educators to work with parents as partners to these ends. In the workplace, there are Federal and State laws to ensure employees of a safe and healthy work environment and their "right to know" about hazardous and toxic substances which are in their workplace. It is equally important that all children in our elementary, middle, and secondary schools throughout the State have the right to a safe and healthy learning environment and the commitment of educators to work with parents, other community members, and local agencies as partners to these ends. It is the right of parents to be informed and involved with educators to mutually work toward these goals in a prudent and balanced manner.

As interpreted by the State Education Department Office of Counsel, Sections 408 and 409 of the Education Law provide the Commissioner of Education with the authority to establish criteria for school reconstruction adequate to maintain healthy and safe conditions, outside New York City. Section 409 of the Education Law further gives the Commissioner the authority to establish necessary health and safety standards in public school buildings, outside the State's Big Five city school districts.

Legislative action should be sought to apply these health and safety standards in the State's Big Five City School districts. It should be noted that students in school buildings are not covered by the laws concerning the health and safety of workplace environments. There also are no provisions in law for a parent's or student's "right to know" about hazardous conditions in their school environment. (See Appendix A for a legal analysis and appropriate sections of Education Law.)

The New York State Education Department provides approximately $450 million annually to schools for construction, reconstruction, and renovation and another $48 million for energy costs, excluding transportation. Schools are major consumers and disposers of paper, supplies, recyclable materials, energy, food, packaging, and so forth. The power of local schools to serve as role models for environmentally responsible behavior (e.g., to realize energy conservation and to reduce the consumption and disposal of toxic or hazardous materials in communities) cannot be overstated. Schools can be both environmentally and fiscally responsible in how buildings are built and maintained, and whether and how toxic/hazardous materials are used and stored.

Reports of environmental problems have raised public concern to new levels. Frequently covered items include asbestos, lead, pesticides, radon, electromagnetic fields, and other aspects of indoor air pollution, sometimes originating from such common items as new carpeting, copiers, glued roofing, paints, cleaning agents, and insulation. Some students and school personnel have experienced mild to serious health problems which interfere with health, activity, and ability to learn. Also, parents and school personnel have become frustrated by a system that, in some cases, has ignored or dismissed their inquiries and complaints about school environmental quality. Decisions must be made at both the State and local levels to determine responsibility and how to address the problems.

It should also be recognized that when health threats are present, the costs to individual districts and the State Education Department are enormous in terms of staff time and

effort, cleanup costs, school closings, and the liability for damage to health. The recent experience of the New York City public schools with closings and delays because of asbestos problems, as well as problems relating to lead and sanitation, reminds us of the potential adverse impact on education caused by environmentally-based health threats. Careful, well thought out policies and guidelines designed to prevent, reduce, and manage hazardous risks, overall consumption, and disposal of hazardous products should significantly reduce, these unfortunate incidents.

The problems are not isolated incidents. They are statewide problems with far reaching effects on the health and safety of our children. The current standards for environmental health and safety are not adequate to protect children. As a result, there is a need to design careful, thoughtful prevention and proactive policies, based on current and emerging research in response to the environmental health and safety conditions in school buildings, such as asbestos, electromagnetic fields, hazardous materials, indoor air quality, lead, pesticides, and radon.

Asbestos

Asbestos is not a single substance, but rather a group of naturally occurring minerals which can be processed into materials which are strong, flexible, durable, heat resistant, and resistant to chemical attack. Because of these remarkable properties, asbestos has been widely used in many products. Asbestos has been known for several decades to be a human carcinogen based on occupational health studies of workers who are involved in its mining, manufacturing, or application. Materials containing asbestos will eventually need removal, but those that are in good condition can be properly maintained in place for many years with minimal risk to the building's occupants. In some instances, improper abatement practices have increased exposure to this hazardous material.

Electromagnetic Fields

Since the late 1970s, the question of whether electrical and magnetic fields that emanate from power lines, wiring, equipment, and lighting cause human health problems has been the subject of much discussion. Concerns have been raised by some scientific studies which have linked electromagnetic fields to serious health problems.

Hazardous Materials

Schools are faced with growing environmental concerns as they consider the purchase of land for new construction, the placement of playing fields, and building additions on existing structures. Public awareness of the legacy of past practices for the disposal of hazardous materials has added a new consideration when siting school facilities. In addition, schools now need to dispose of hazardous materials and supplies from classrooms and buildings. If not handled correctly, such materials can create serious health hazards for students and school personnel.

Indoor Air Quality

Indoor air contaminants are either particles (e.g., tobacco smoke, allergens, asbestos, fibers, respirable particles, bacteria, and viruses), chemicals or gases (e.g., carbon monoxide, radon, formaldehyde, oxides of nitrogen or sulfur, and volatile organic compounds). Indoor air quality problems are commonly associated with a number of conditions, such as inadequate ventilation, contamination from indoor sources, introduction of outdoor contaminants, microbial contamination, and poor maintenance. The effects of poor indoor air quality can be so subtle that they go unnoticed or are dismissed or attributed to common allergies, flu, the common cold, or stress. Some air pollutants may trigger or aggravate medical conditions. The symptoms of individuals with respiratory problems (such as asthma, bronchitis, and emphysema) can be aggravated by indoor air irritants. There is growing evidence that poor indoor air quality can produce verbal, perceptual, motor, and behavioral disabilities in children, as well as hearing impairments, irritability, and delayed physical and neurobehavioral development.

Lead

Lead is a poison that affects virtually every system in the body, and is particularly harmful to the developing brain and nervous systems of fetuses and young children. There is growing evidence that exposure to even low lead levels can produce verbal, perceptual, motor, and behavioral disabilities in children, as well as hearing impairments, irritability, and delayed physical and neurobehavioral development. In schools, lead may be found in deteriorated paint, contaminated soil, dust, and drinking water, among other sources.

Pesticides

Pesticides, a diverse group of toxic chemicals, are widely used in agricultural production, factories and offices, homes and restaurants, and schools to kill, repel or control the target pest. Schools, with kitchens and cafeterias, athletic fields and playgrounds, classrooms and offices, are regularly treated with a variety of pesticides. An increasing body of scientific data on the potentially harmful effects of pesticide exposure on people and on the environment raises concern about the broad use of these toxic substances, many of which are neurotoxic or carcinogenic.

Radon

Radon is a naturally occurring colorless, odorless and tasteless radioactive gas. It comes from the natural breakdown of uranium which is found in soil and rock throughout the United States. It travels through soil and enters buildings

through cracks and other holes in the foundation. Eventually, it decays into radioactive particles which become trapped in our lungs, releasing small bursts of radiation which can damage lung tissue and in time lead to lung cancer. Because indoor radon concentrations vary with building construction, ventilation characteristics and the underlying soil and rock, only testing can determine if elevated radon levels exist.

In summary, the primary purpose of this Advisory Committee is to develop recommended proposals for policy and action to improve the environmental quality of schools. The legal and fiscal implications of these proposals have been tentatively identified by State Education Department staff. (See Appendix B for an analysis of the proposals' implications.)

II. Regents Advisory Committee on Environmental Quality in Schools

The Regents interest in the environmental quality of schools has been advanced in a number of discussions and policy documents over the years. Beginning with the public school building health and safety discussions in 1988 and continuing through the indoor air quality in schools report in 1989 and their early childhood policy statement, background paper and action plan in 1992 and 1993, the Regents have demonstrated concern about the environmental health and safety of children.

Most recently, in October 1993, the Regents reviewed a background paper by State Education Department staff on the Environmental Quality in Schools. (See Appendix C for the Environmental Quality in Schools background paper.) The paper detailed some health and safety concerns for students and school personnel and recommended that the Regents establish an Environmental Quality Advisory Committee with the charge of developing a draft policy:

- affirming every child's right to an environmentally safe and healthy learning environment;
- affirming every parent's "right to know" about health hazards in the school environment; and
- advancing other key policies.

On October 14, 1993, the Regents established the Advisory Committee on Environmental Quality in Schools with the following membership:

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Saul B. Cohen, N.Y.S. Board of Regents
New Rochelle, N.Y.

James C. Dawson, N.Y.S. Board of Regents
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James O'Connell
N.Y.S. Council of School Superintendents

George Perry
N.Y.S. Association of School Business Officials

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N.Y.S. Senate Majority Program Office

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Environmental Health
Doris J. Rapp, M.D.
Environmental Health Physician and Allergist

In December 1993, the Advisory Committee met for the first time and explored potential policy issues on hazardous materials, pesticides, asbestos, lead, indoor air quality, electromagnetic fields, and radon. The next month the Advisory Committee met again to clarify issues and concerns in the environmental health areas.

To assist in its deliberations, the Advisory Committee convened two public hearings — the first on March 16, 1994, in Albany, and the second on May 12, 1994, in New York City. Individuals and organizations were invited to present testimony on a range of policy concerns regarding school environmental quality. Individuals presented testimony in person and others submitted written statements. (See Appendix D for the summary of recommendations from the Albany and New York City Public Hearings.)

In April 1994, the Advisory Committee met to review the testimony presented at the Albany public hearing and to discuss the policy recommendations for consideration by the Board of Regents. Again in May, the Advisory Committee met for the last time to review the testimony presented at the New York City public hearing and to discuss its report to the Regents. State Education Department staff then compiled common elements of the testimony and incorporated them into the policy proposals which were reviewed, discussed, and agreed to by the Advisory Committee.

III. Guiding Principles and Proposals to Strengthen the Environmental Quality of Schools

Based on Advisory Committee discussions and testimony presented at the Albany and New York City public hearings, the Regents Advisory Committee on Environmental Quality in Schools developed the following guiding principles and proposals and recommends their approval by the Board of Regents and implementation by the State Education Department in schools throughout the State. These guiding principles and proposals apply to all school districts in the State, including the Big Five City School districts where existing legislation restricts the Commissioner of Education's authority regarding school health and safety.

Guiding Principles

- **Every child has a right to an environmentally safe and healthy learning environment which is clean and in good repair.**
- **Every child, parent, and school employee has a "right to know" about environmental health issues and hazards in their school environment.**
- **School officials and appropriate public agencies should be held accountable for environmentally safe and healthy school facilities.**
- **Schools should serve as role models for environmentally responsible behavior.**
- **Federal, State, local, and private sector entities should work together to ensure that resources are used effectively and efficiently to address environmental health and safety conditions.**

Proposals for Consideration by the New York State Board of Regents

Proposal 1:
Improve school facilities to make them more environmentally sound as follows:

1.1 School districts shall avoid engaging in renovation and construction projects while school is in session, but, if such projects must be conducted, affected areas, to the degree possible, shall be isolated from students and school personnel.

1.2 School officials shall accommodate (e.g., relocate) those individuals affected by noxious emissions from construction that cannot be isolated from building occupants.

1.3 Schools shall conduct environmental site audits for new building construction, including adjacent land, to identify potential environmental health hazards.

1.4 Schools submitting building plans and specifications to the State Education Department for Commissioner's approval shall not place air intake vents adjacent to school bus loading/unloading areas, loading docks, or air exhaust vents.

1.5 Schools shall be required to develop written building operations and maintenance plans and schedules with logs, including the heating, ventilation, and air-conditioning systems, based on models developed by the State Education Department.

1.6 Schools shall use construction materials and school supplies which are less toxic and less hazardous to building occupants.

1.7 School buildings, when designed or renovated, should use design principles and construction materials which further the goals of conserving energy, ensuring good indoor air quality, pest-proofing, radon-proofing, ease of maintenance and include other factors contributing to positive learning environments.

1.8 Schools should consider creating "chemically clean" or environmentally safer classrooms (portable or within schools) for asthmatic, allergic, or chemically sensitive students who have not been able to attend classes regularly within their school buildings.

Proposal 2:
Improve indoor air quality in schools as follows:

2.1 The State Education Department shall implement Federal legislation which prohibits environmental tobacco smoke in school buildings (i.e., OSHA and *Goals 2000: Educate America Act*).

2.2 School districts shall operate and, where necessary, upgrade the operation of heating, ventilation, and air-conditioning systems to meet the ventilation standards of the American Society for Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE), where needed and feasible.

2.3 Schools shall develop guidelines to reduce exposure to chemical fragrances which can cause possible adverse reactions in some individuals.

Proposal 3:
Improve school pest management programs as follows:

3.1 Schools shall adopt and publicize integrated pest management policies and practices to prevent, reduce, or eliminate pesticide use. When pesticides are deemed essential, the less-toxic alternative shall be selected.

3.2 Schools shall select pest management practices which minimize exposure of individuals to pesticides.

3.3 Schools shall post warning signs at the main entrance of the school, and elsewhere as required by law, whenever pesticides are applied, indoors or outdoors, and shall leave the warning signs in place for at least 48 hours following the pesticide application.

3.4 Schools shall provide prenotification to students, parents, and school personnel of intended pesticide application(s).

3.5 Schools shall have a certified pesticide applicator on-site supervising or performing pesticide applications.

3.6 Schools shall provide integrated pest management (IPM) training to appropriate custodial and maintenance personnel on an annual basis.

3.7 Schools shall maintain, and make available to parents and school personnel, records of all pesticide applications, including the pesticide(s) applied, the date(s) of application(s), and the location(s) treated.

Proposal 4:
Strengthen the asbestos compliance program as follows:

4.1 The State Education Department, in cooperation with the statewide Health and Safety Coordinator network, shall provide a compliance review of school asbestos management plans.

4.2 The State Education Department, in cooperation with the statewide Health and Safety Coordinator network, shall conduct annual workshops for the asbestos-LEA-designee in school districts.

Proposal 5:
Require periodic lead testing in all schools as follows:

5.1 Schools shall sample and analyze drinking water, soil, and paint for lead content using the Environmental Protection Agency (EPA) protocols and the results should be compared to appropriate State and Federal standards and guidelines.

5.2 Schools shall use appropriate methodology, based on Federal Occupational Safety and Health Acts (OSHA) and Housing and Urban Development (HUD) guidelines or other appropriate regulations, to ensure protection from exposure to lead dust and residue during lead cleanup, routine maintenance repair, and renovation.

5.3 Schools shall use only "lead-free" instructional materials and supplies and shall not introduce new sources of lead into the school environment.

5.4 Schools shall require that children entering school for the first time, aged six and under, present proof of a blood test for lead.

Proposal 6:
Require all schools to conduct radon testing and notification as follows:

6.1 Schools shall be tested periodically, as appropriate, for radon levels in all frequently occupied rooms which are at or below ground level.

6.2 Schools with readings which exceed the U.S. Environmental Protection Agency recommended accepted level for radon shall develop mitigation/abatement plans, and shall implement effective plans with notification to parents and school personnel.

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Proposal 7:
Encourage schools to practice prudent avoidance by taking available no-cost and low-cost measures to reduce the exposure of students and school personnel to electromagnetic fields as follows:

7.1 The State Education Department should work with appropriate State agencies and recognized outside authorities to provide updated and current information about electromagnetic fields in the school environment to the school community.

7.2 Electromagnetic field exposure and available prudent avoidance measures should be considered in the siting, design, construction, and furnishing of new schools. This consideration should include all sources of electromagnetic field exposure in and around the proposed structure.

7.3 Electromagnetic field exposure and available prudent avoidance measures should be considered in determining space utilization in existing facilities and purchase of new and replacement electrical devices and equipment for these facilities.

Proposal 8:
Require the reporting of significant environmental conditions testing in school buildings and on school properties as follows:

8.1 Schools which conduct any environmental conditions testing, including lead, radon, indoor air, pesticides and other chemicals, shall report significant findings of such tests to the State Education Department, and shall provide an action and mitigation plan, if warranted. (Similar requirements are now in place for reporting findings related to asbestos - Education Law Section 3602-a.)

Proposal 9:
Require all school districts to establish policies to ensure access to environmental health and safety information ("right to know") for individuals relating to environmental safety and health as follows:

9.1 School districts shall ensure that students, parents, school personnel, and the community have access to information, in a timely manner, about known and potential exposures to environmental health hazards in their school environment. In addition, all test reports will be made available upon request.

9.2 School districts shall notify parents and school personnel of routine and sudden environmental health hazard exposures and environmental testing results in a timely manner.

9.3 School districts shall ensure that parents, students, and school personnel have access to an orderly and expedited process for resolving environmental health concerns.

9.4 School districts shall make abatement plans accessible and available to parents, school personnel, and other interested parties.

Proposal 10
Require all school districts to develop and implement environmental quality plans for each school building. Such plans shall be reviewed periodically and shall address the following:

10.1 The State Education Department shall require schools to use less-toxic and less-hazardous products for instruction, building operations and maintenance, custodial purposes, machinery, and furnishings, and evaluate curricular mandates for hazardous materials use and processes.

10.2 The State Education Department shall require schools to establish specific procedures that address emergency situations where children and school personnel are exposed to hazardous substances.

10.3 Every school district shall designate a person in each school building to be responsible for the reporting of problems to the local school board and the on-site management of the environmental quality plan, including establishing an environmental quality school-community team to develop the environmental quality plan.

10.4 The State Education Department shall require schools to identify and abate sources of air contamination or hazardous conditions that originate in school buildings or on school grounds.

10.5 The State Education Department shall require school districts to eliminate conflict of interest through contract language and written agreements which ensure that contractors for testing and laboratory analysis are independent of any affiliation with individuals and/or organizations that may financially benefit from the repair of buildings or the removal of hazardous materials.

10.6 The State Education Department shall require schools, within their environmental quality plan, to address the reasonable accommodations of students and school personnel with environmental sensitivities, as diagnosed by a licensed physician.

Proposal 11:
Establish a Regents Subcommittee on the Environmental Quality of Schools as follows:

11.1 The Board of Regents, through the Subcommittee, shall provide direction on policy and action to the State Education Department on environmental health and safety

issues of schools and on constructing and maintaining schools which are clean and in good repair.

11.2 The Subcommittee shall be comprised of Regents and other members from the following groups — parents, students, school personnel, environmental and public health professionals, State agencies, and members of the private sector, such as industrial hygienists, architects, and ventilation engineers.

Proposal 12:
Dedicate additional staff in the State Education Department to implement the proposals of this report and of the proposed Regents Subcommittee on the Environmental Quality of Schools as follows:

12.1 The State Education Department shall secure and provide resources for additional staff within the Facilities Planning Team to assist schools with their environmental health obligations.

12.2 The State Education Department should conduct and support research on current and emerging environmental health and safety issues which will serve as a basis for policy and action.

12.3 The State Education Department shall establish an Ombudsman to respond to the environmental health and safety concerns of students, parents, and school personnel.

12.4 The State Education Department, in cooperation with other appropriate State agencies and the Regents Subcommittee, shall convene (a) working group(s) of technical experts and other appropriate individuals to advise staff and the Regents Subcommittee on environmental health and safety issues, as needed.

Proposal 13:
Improve the State Education Department's technical assistance to school districts relating to the quality of the school environment as follows:

13.1 The State Education Department in cooperation with other State agencies shall develop model environmental quality plans for school buildings typical of school districts in New York State to serve as guides to school districts.

13.2 The State Education Department shall update ***The School Site: Standards, Selection, Development*** and the ***Manual of Planning Standards*** and develop an **Indoor Air Quality Manual, HVAC Manual, Environmental Audit Manual** and other necessary materials that reflect current state-of-the-art technology, as they apply to environmental quality in school construction, renovation, and maintenance and operation.

13.3 The State Education Department shall disseminate environmental health and safety manuals that are suitable for use by all members of the school community.

13.4 The State Education Department, in cooperation with other State agencies, shall conduct selected environmental health and safety audits and shall establish a monitoring process for compliance.

13.5 The State Education Department, in cooperation with other State agencies, shall develop procedures for using school personnel to measure and correct environmental conditions in schools.

13.6 The State Education Department shall review and update procedures on emergency situations related to environmental health exposures for children and school personnel.

13.7 The State Education Department, in collaboration with other agencies, shall develop and distribute guidelines on the accommodations of students and staff with environmental sensitivities based on current Federal and State civil rights and education laws.

Proposal 14:
Expand the existing statewide Health and Safety Coordinators network to work with school boards, school personnel, parents, and community members, including New York City, in addressing environmental health concerns as follows:

14.1 The State Education Department, in cooperation with the statewide network and other appropriate agencies, shall develop a "train-the-trainer"[1] program to educate school coordinators on environmental health issues.

14.2 The statewide network shall assist schools in developing environmental assessment reviews.

14.3 The statewide network shall provide technical assistance to schools in abating environmental hazards.

Proposal 15:
Increase collaboration between the State Education Department and other State agencies in addressing environmental health and safety issues as follows:

15.1 The State Education Department shall conduct workshops on environmental quality issues for school personnel, students, parents, and/or the community and seek the cooperation and participation of other State agencies (i.e., the State Departments of Environmental Conservation, Labor, Law, Health, and Public Service and the State Energy Office).

[1] "Train-the-trainer" is a process whereby State agency and other competent experts train Health and Safety Coordinators who, in turn, train/educate the school designated person responsible for replicating the process in his/her school and community.

15.2 The State Education Department, in conjunction with appropriate agencies and the Regents Subcommittee, shall periodically evaluate, update and disseminate current recognized protocols, guidelines, and standards for environmental conditions in schools.

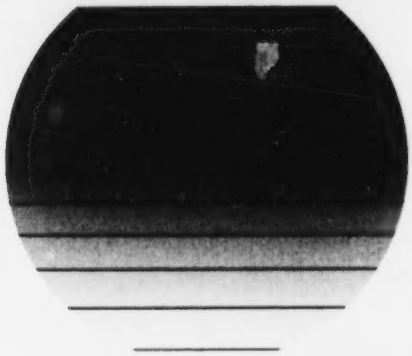
15.3 The State Education Department, in conjunction with appropriate agencies, shall develop a statewide clearinghouse of school environmental health and safety information for use by parents, teachers, administrators, physicians, nurses, and other interested parties.

15.4 The State Education Department, in conjunction with appropriate agencies, shall develop interagency cooperative agreements for investigating and resolving environmental inquiries and complaints in a timely and expedited manner.

Proposal 16:
Fund environmental health and safety programs in schools as follows:

16.1 The State Education Department shall develop a funding proposal to assist school districts in proper building maintenance and repair relating to environmentally safe buildings.

16.2 The State Education Department shall provide new full-funding aid for additional expenses incurred in implementing legislatively mandated environmental health programs.



APPENDIX A

LEGAL ANALYSIS BY THE STATE EDUCATION DEPARTMENT OFFICE OF COUNSEL AND APPROPRIATE SECTIONS OF EDUCATION LAW GOVERNING ENVIRONMENTAL ISSUES

The Commissioner of Education may adopt only those regulations that are within the Commissioner's statutory authority and not in conflict with other statutes (State Administrative Procedures Act § 202[1][f][i]; 202-c[4][a][i],[v]). There are two basic sources of statutory authority for the Commissioner of Education to adopt regulations concerning environmental health and safety in public elementary, middle, and secondary schools, namely Education Law §§408 and 409.

Under Education Law §408, the Commissioner of Education approves plans and specifications for the erection, purchase, repair, enlargement, or remodeling of school buildings and additions for school districts, other than the New York City school district. Education Law §408(2) requires that the Commissioner, in reviewing plans and specifications, assures that they "provide for heating, ventilation, sanitation, storm drainage and health, fire and accident protection adequate to maintain healthful, safe and comfortable conditions therein." Education Law §408(3) further requires that such plans and specifications comply with Education Law and the Regulations of the Commissioner and that the Commissioner assures that the site was selected with reasonable consideration of several factors, including its place in the school district's long-term facilities plan, cost and the educational adaptability, environment, and accessibility.

Under Education Law §409, all school buildings in school districts, other than city school districts in cities with 125,000 inhabitants or more (i.e., the Big Five city school districts), must comply with the Regulations of the Commissioner of Education adapted for the purpose of "insuring the health and safety of pupils in relation to proper heating, lighting, ventilation, sanitation and health, fire and accident protection."

These two statutes, particularly §409, do appear to give the Commissioner authority to adopt regulations to carry out many of the recommendations of the Regents Advisory Committee on Environmental Quality in Schools that relate to environmental health of pupils in school buildings. However, the Commissioner's authority under these statutes does not extend to all school districts. It should be noted that the Commissioner's authority under §409 for regulation on environmental health may not apply to the Big Five city school districts. Similarly, where there is reliance on §408 for authority for regulation, that regulation may not apply to the New York City school district. Legislation would be needed to implement most of the proposals in the Advisory Committee's report.

Beyond §§408 and 409, there are no other provisions of Education Law that would give the Commissioner authority over environmental health in school district buildings, except Education Law §305(19), which authorizes the Commissioner to regulate the storage of chemicals in science facilities in elementary and secondary schools.

Some of the recommendations would have the Commissioner require school districts to report information to the State Education Department on environmental health. In this regard, the Commissioner has very broad authority under Education Law §215 to require reporting by any school district in the State.

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§ 408. Plans and specifications of school buildings must be approved by commissioner of education

1. No schoolhouse shall hereafter be erected, purchased, repaired, enlarged or remodeled nor shall the advertisement for bids for the execution of the plans and specifications for such schoolhouse be placed, in any school district except in a city school district in a city having seventy thousand inhabitants or more, at an expense which shall exceed one hundred thousand dollars, until the plans and specifications shall have been submitted to the commissioner of education and his approval endorsed thereon. Such plans and specifications shall show in detail the ventilation, heating and lighting of such buildings.

In the case of a school district in a city having seventy thousand inhabitants or more, all the provisions previously set forth in this subdivision shall apply, except that the commissioner may waive the requirement for submission of plans and specifications and substitute therefor the requirement for submission of an outline of such plans and specifications for his review. Such outline shall be in a form which he may prescribe from time to time.

In either case, the commissioner may, in his discretion, review plans and specifications for projects estimated at an expense of less than one hundred thousand dollars.

In the case of a school district in a city having a million inhabitants or more, all of the provisions previously set forth in this subdivision shall apply, except that such school district shall only be required to submit an outline of the plans and specifications to the commissioner of education for his information where a schoolhouse is to be erected in conjunction with the development of a

project to be developed under the provisions of article two or five of the private housing finance law and where both the school and the project are to have rights or interests in the same land, regardless of the similarity or equality thereof, including fee interests, easements, space rights or other rights or interests.

[See main volume for 2 to 6]

(As amended L.1990, c. 315, § 1.)

Historical and Statutory Notes

1990 Amendment. Subd. 1, opening par. L.1990, c. 315, § 1, prohibited the placement of advertisements for bids for execution of plans and specifications for schoolhouses in school districts until such plans and specifications have been submitted to and approved by the commissioner.

Effective Date of Amendment by L.1990, c. 315; Rules and Regulations. L.1990, c. 315, § 2, provided: "This act [amending this section] shall take effect immediately [June 30, 1990] and shall apply to plans and specifications of projects to be advertised after such effective date and further provided that any rule or regulation necessary for the implementation of the foregoing section of this act on its effective date is authorized and directed to be made and completed within 180 days after such effective date."

Rules of the City of New York

Health code concerning buildings and commercial premises, see 24 RCNY Arts. 131 and

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2. The commissioner of education shall not approve the plans for the erection or purchase of any school building or addition thereto or remodeling thereof unless the same shall provide for heating, ventilation, lighting, sanitation, storm drainage and health, fire and accident protection adequate to maintain healthful, safe and comfortable conditions therein and unless the county superintendent of highways or commissioner of public works has been advised of the location of all temporary and permanent entrances and exits upon all public highways and the storm drainage plan which is to be used.

3. The commissioner of education shall approve the plans and specifications, heretofore or hereafter submitted pursuant to this section, for the erection or purchase of any school building or addition thereto or remodeling thereof on the site or sites selected therefor pursuant to this chapter, if such plans conform to the requirements and provisions of this chapter and the regulations of the commissioner adopted pursuant to this chapter in all other respects; provided, however, that the commissioner of education shall not approve the plans for the erection or purchase of any school building or addition thereto unless the site has been selected with reasonable consideration of the following factors; its place in a comprehensive, long-term school building program; area required for outdoor educational activities; educational adaptability, environment, accessibility; soil conditions; initial and ultimate cost.

4. No funds voted by a district meeting or other competent authority in any school district to which the provisions of subdivision one of this section are applicable, exceeding the amounts specified in such subdivision, shall be expended by the trustees or board of education until the commissioner of education shall certify that the plans and specifications for the same comply with the provisions of this section.

5. In a city having a population of one million or more, all designing, draughting and inspecting necessary in connection with the construction, additions to, alterations and maintenance of schoolhouses shall be performed by a bureau established and maintained for this purpose under the board of education. The work of this bureau shall be performed by civil service employees in the classified civil service under the direction of the superintendent of school buildings, design and construction, except that repairs, betterment and maintenance of heating and ventilating plants and equipment, elevators and mechanical equipment shall remain under

the direction of the superintendent of plant operation and maintenance. In a special case upon approval of the board of estimate, such designing, draughting or inspecting may be otherwise performed.

6. The commissioner may promulgate regulations relating to the purchase of existing school buildings. Such regulations shall provide for an appraisal of such buildings as school buildings and the land on which they are situtated [1] as school sites by the state board of equalization and assessment, such estimates of the cost of renovation and construction as may be necessary and limitations on the cost of acquisition and renovation, in taking into consideration the age and condition of such existing buildings, in relation to the estimated cost of constructing a new building containing comparable facilities. Such regulations may also require the prior approval of the commissioner of any renovations proposed to be made to such existing school buildings.

(L.1947, c. 820; amended L.1948, c. 691, § 1; L.1949, c. 709, §§ 1, 2; L.1951, c. 781; L.1951, c. 801, §§ 1, 2; L.1962, c. 616, § 1; L.1963, c. 609; L.1965, c. 257; L.1971, c. 933; L.1972, c. 414, §§ 8, 9.)

[1] So in original. Probably should read "situated".

Historical Note

1972 Amendment. Subds. 1, 2 and 3. L.1972, c. 414, § 8, eff. July 1, 1972, inserted references to purchases.

Subd. 6. L.1972, c. 414, § 9, eff. July 1, 1972, added subd. 6.

Derivation. Education Law of 1910, § 451, amended L.1937, c. 924; L.1940, c. 427; L.1946, c. 141. Similar provisions were contained in Education Law of 1909, § 111, subds. 1, 2, 3, derived from Consolidated School Law of 1894, c. 556, tit. 7, § 17, amended L.1904, c. 281, § 1; originally revised from L.1864, c. 555, tit. 7, § 18, amended L.1883, c. 294.

Note of Commission on 1947 Revision. Section revised; former § 451; spelling of "schoolhouse" corrected; numbering of subdivisions standardized; position of a comma corrected; "or board of education" inserted in subd. 4, as union free schools and cities would not be covered by "trustees"; reference to board of estimate "and apportionment" corrected; 2 titles corrected; reference to "third class cities" specified.

Separability of Provisions of L.1972, c. 414. See section 11 of L.1972, c. 414, set out as a note under section 549.

Cross References

New York state uniform fire prevention and building code, see Executive Law § 370 et seq.

New York Codes, Rules and Regulations

Construction and remodeling of school district facilities, see 8 NYCRR 155.2.
Health and safety in existing educational facilities, see 8 NYCRR 155.3.
Purchase of existing buildings, see 8 NYCRR 155.7.

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§ 408–a. Plans and specifications for construction of new school buildings

1. The commissioner of general services, after consultation with the commissioner of education and subject to the approval of the director of the budget, shall promptly prepare or acquire as many master sets of complete plans and specifications for the construction of new school buildings and appurtenant facilities as shall be sufficient to provide at least six different master sets each for elementary, junior high and high schools, based on the number of pupils to be accommodated therein. Such plans and specifications

shall be prepared so as to provide adequate classrooms and other necessary space and facilities at the lowest cost consistent with sound construction principles and practices, and the attainment of educational objectives, and shall provide for heating, ventilation, lighting, sanitation and health, fire and accident protection adequate to maintain healthful, safe, and comfortable conditions therein. Such plans and specifications shall be so prepared that any possible future addition to any such school building may be economically effectuated. In addition, the commissioner of general services shall, as often as he deems advisable but at least annually, review such master sets and, after consultation with the commissioner of education, and subject to approval of the director of the budget, may revise or cancel any of such sets or prepare new sets.

2. The commissioner shall cause duplicates of such master plans and specifications to be made, and he shall furnish the same to any school district making a request therefor for a reasonable charge sufficient to cover the cost of reproducing such plans and specifications.

3. Plans and specifications prepared and furnished pursuant to the provisions of this section may be adopted and used in any school district as the plans and specifications for the construction of any new school building or appurtenant facility hereafter to be erected.

4. Nothing herein contained shall preclude any school district from retaining an architect and/or engineer in connection with the use of such master plans and specifications.

(Added L.1960, c. 447; amended L.1968, c. 420, § 100.)

Historical Note

Effective Date. Section effective Apr. 12, 1960, pursuant to L.1960, c. 447, § 2.

Library References

American Digest System

Construction of school buildings, see Schools ⇐71.

Encyclopedia

School buildings—

Care, maintenance, and repair, see C.J.S. Schools and School Districts § 263.

Proceedings to authorize construction, see C.J.S. Schools and School Districts § 257.

Notes of Decisions

1. Construction standards and requirements

There is no specific standard for roof construction set by the Education Department. Matter of Nugent, 1983, 22 Educ.Dept.Rep. 347.

The Commissioner of Education, rather than the Industrial Commissioner, is authorized to set the requirements for construction of school buildings, and the provisions of the Manual Planning Standards take precedence over those of the Industrial Code. Op.Counsel Educ. Dept., 1968, 8 Educ.Dept.Rep. 225.

§ 409. School building regulations in relation to health and safety

All school buildings of school districts other than city school districts of cities having one hundred twenty-five thousand inhabitants or more shall comply with such regulations as the commissioner of education shall adopt from time to time for the purpose of insuring the health and safety of pupils in relation to proper heating, lighting, ventilation, sanitation and health, fire and accident protection.

(Added L.1951, c. 801, § 4; amended L.1952, c. 443; L.1962, c. 124.)

Historical Note

Effective Date. Section effective Apr. 13, 1951, pursuant to L.1951, c. 801, § 11.

Former Section 409. Section, L.1947, c. 820, related to halls, doors, and stairways, and was repealed by L.1951, c. 801, § 3.

Governor's Memorandum. On approving L.1951, c. 801, affecting this section and §§ 408, 1531, 1806 and 3603–a, the Governor stated as follows:

"This bill modernizes the responsibilities of the Commissioner of Education with respect to the construction and alteration of school buildings and also makes important changes with respect to State aid for central school districts during the first three years after their creation.

"Although the language of Section 409, as added by this bill, read out of context with the article in which it is inserted might be misunderstood, when read in connection with Section 408 and the other provisions of the article it is apparent that it is intended to apply only to public school buildings in cities of less than 70,000 and in non-city school districts. Counsel to the State of New York Commission on School Buildings, which sponsored the bill, has given assurances to that effect.

"Because of the importance of the provisions of this bill, particularly as to State aid for central schools, the bill is approved." Approved April 13, 1951.

Cross References

School asbestos safety act, see section 430 et seq.
School crossing guards, see General Municipal Law § 208–a.

New York Codes, Rules and Regulations

Fire and building safety inspections, see 8 NYCRR 155.4.
School asbestos hazard grant program, see 8 NYCRR 155.12.
School swimming pools, see 8 NYCRR 155.6.

Library References

American Digest System
School buildings, control and use, see Schools ⇐72.
Encyclopedia
School buildings, control, possession, and use, see C.J.S. Schools and School Districts § 259.

Notes of Decisions

1. Local laws

Local ordinance restricting smoking by the public in a meeting place did not infringe upon educational function of state when ordinance was applied to school, as ordinance did not attempt to regulate educational function of school system or attempt to regulate structure, maintenance, or administration of school. Board of Educ. of Middle Country School Dist. at Centereach v. Cohalan, 1987, 135 Misc.2d 358, 515 N.Y.S.2d 691.

Fire prevention regulations established by town ordinance are not applicable to public school property, but private and parochial school property is subject to such regulation. 14 Op.State Compt. 469, 1958.

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APPENDIX B

LEGAL AND FISCAL IMPLICATIONS OF THE PROPOSALS OF THE REGENTS ADVISORY COMMITTEE ON ENVIRONMENTAL QUALITY IN SCHOOLS PREPARED BY THE STATE EDUCATION DEPARTMENT

The Regents Advisory Committee on Environmental Quality in Schools discussed many areas of environmental health and safety, some of which State agency representatives indicated will need to be addressed through new legislation or regulations. Due to time constraints, the Advisory Committee has not been able to discuss fully the following legal and fiscal analysis conducted by State Education Department staff, but the Committee recognizes the work as a first step toward identifying these implications of the Committee's proposals. It is the Committee's belief that these proposals can result in improved learning and working environments and improved environmental protection for all.

Legal and Fiscal Implications

Proposal	Need for Legislation, Regulations, and/or Guidelines	Costs/Savings
1. Improve school facilities to make them more environmentally sound.	Legislation: needed to expand Commissioner's authority under Sections 408 and 409 of Education Law to apply to all school districts Commissioner's Regulations: needed Administrative Guidelines: needed	State level: moderate to revise guidelines for construction and environmental audits Local level: moderate to revise building plans and specifications, to conduct environmental audits, and to use least toxic materials and supplies Savings: reduced immediate and long-term testing and mitigation costs
2. Improve indoor air quality in schools.	Legislation: not needed Commissioner's Regulations: possibly needed Administrative Guidelines: needed	State level: substantial to provide building aid to support changes in heating, ventilation, and air-conditioning systems Local level: substantial to provide local support for building projects relating to indoor air quality Savings: improved student and school personnel attendance and performance, and reduced Workers' Compensation payments and equipment maintenance
3. Improve school pest management programs.	Legislation: needed to expand Commissioner's authority relating to indoor health and safety under Section 409 of Education Law to apply to the Big Five City Districts; and needed to provide Commissioner authority under Education Law to apply health and safety standards outside school buildings in all school districts Commissioner's Regulations: needed Administrative Guidelines: needed	State level: minimal to develop guidelines Local level: minimal to change practices Savings: reduced costly chemical application fees

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LEGAL AND FISCAL IMPLICATIONS

PROPOSAL	NEED FOR LEGISLATION, REGULATIONS, AND/OR GUIDELINES	COSTS/SAVINGS
4. Strengthen the asbestos compliance program.	Legislation: not needed Commissioner's Regulations: not needed Administrative Guidelines: needed	State level: needed to develop guidelines and training Local level: minimal for compliance and certificate training activities Savings: reduced litigation and union grievance costs and reduced fines and penalities
5. Require periodic lead testing in all schools.	Legislation: needed to provide Commissioner authority under Education Law Commissioner's Regulations: needed Administrative Guidelines: needed	State level: substantial to provide aid for testing and lead cleanup Local level: substantial cost for testing and reporting Savings: not estimated
6. Require all schools to conduct radon testing and notification.	Legislation: needed to provide Commissioner authority under Education Law Commissioner's Regulations: needed Administrative Guidelines: needed	State level: minimal for preparation of guidelines Local level: moderate to substantial cost for testing and reporting Savings: not estimated
7. Encourage schools to practice prudent avoidance by taking available no-cost and low-cost measures to reduce the exposure of students and school personnel to electromagnetic fields.	Legislation: not needed Commissioner's Regulations: not needed Administrative Guidelines: needed	State level: minimal to develop guidelines Local level: limited to changes in local practices Savings: reduced litigation and union grievance costs
8. Require the reporting of significant environmental conditions testing in school buildings and on school properties.	Legislation: not needed Commissioner's Regulations: needed Administrative Guidelines: needed	State level: minimal Local level: limited to reporting to State Savings: not estimated

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LEGAL AND FISCAL IMPLICATIONS

PROPOSAL	NEED FOR LEGISLATION, REGULATIONS, AND/OR GUIDELINES	COSTS/SAVINGS
9. Require all school districts to establish policies to ensure access to environmental health and safety information ("right to know") for individuals relating to environmental safety and health.	Legislation: needed to expand Commissioner's authority under Education Law to apply to the Big Five City Districts Commissioner's Regulations: needed Administrative Guidelines: needed	State level: minimal to develop guidelines for implementation Local level: minimal to implement right to know policies and procedures Savings: not estimated
10. Require all school districts to develop and implement environmental quality plans for each school building. Such plans shall be reviewed periodically.	Legislation: needed to expand Commissioner's authority under Section [illegible] of Education Law to apply to the Big Five City Districts; and to provide Commissioner authority relating to contracts for removal of hazardous waste Commissioner's Regulations: needed Administrative Guidelines: needed	State level: moderate to substantial Local level: moderate costs associated with implementing Regents and local school board policies Savings: not estimated
11. Establish a Regents Subcommittee on the Environmental Quality of Schools.	Legislation: not needed Commissioner's Regulations: not needed Administrative Guidelines: not needed	State level: needed for staff support of Advisory Committee and any meeting expenses Local level: none Savings: none
12. Dedicate additional staff within the State Education Department to implement the proposals of this report and of the proposed Regents Subcommittee on the Environmental Quality of Schools.	Legislation: needed for additional funding for staffing Commissioner's Regulations: not needed Administrative Guidelines: not needed	State level: substantial to fund additional staff Local level: none Savings: none
13. Improve the State Education Department's technical assistance to school districts relating to the quality of the school environment.	Legislation: not needed Commissioner's Regulations: not needed Administrative Guidelines: needed	State level: substantial to strengthen State's technical assistance capabilities Local level: Minimal with possible large costs to rectify some problems Savings: reduced penalities and fines at the local level

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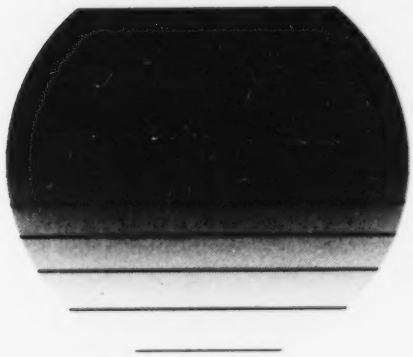
LEGAL AND FISCAL IMPLICATIONS

PROPOSAL	NEED FOR LEGISLATION, REGULATIONS, AND/OR GUIDELINES	COSTS/SAVINGS
14. Expand the existing statewide Health and Safety Coordinators Network to work with school boards, school personnel, parents, and community members, including New York City, in addressing environmental health concerns.	Legislation: not needed Commissioner's Regulations: not needed Administrative Guidelines: needed to clarify responsibilities of statewide network	State level: minimal to establish responsibilities of statewide network Local level: minimal for network costs Savings: reduced litigation and union grievance costs
15. Increase collaboration between the State Education Department and other State agencies in addressing environmental health and safety issues.	Legislation: not needed Commissioner's Regulations: not needed Administrative Guidelines: needed	State level: staff time to coordinate interagency efforts Local level: none Savings: more coordinated effort
16. Fund environmental health and safety programs in schools.	Legislation: needed for funding authorization Commissioner's Regulations: needed Administrative Guidelines: needed	State level: substantial funding needed Local level: local matching funding Savings: none



APPENDIX C: REPORT

ENVIRONMENTAL QUALITY IN SCHOOLS

OCTOBER 1993

The University of the State of New York • The State Education Department

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EXECUTIVE SUMMARY

Although focussed on teaching and learning, education reform, as envisioned by *A New Compact for Learning* and the *Regents Bill of Rights for Children*, must include policy directions for the need to maintain a safe, secure, and healthy school environment. Increasing concern about the effects of environmental conditions on human health and knowledge of children's increased susceptibility to certain conditions, has resulted in parents, school personnel, and public officials raising questions related to the quality of the school environment.

This paper presents background information on the effect of some health and safety issues on the environmental quality of schools along with potential policy issues for the Board of Regents consideration. Environmental issues addressed are: asbestos, electromagnetic fields, hazardous waste, indoor air quality, lead, pesticides, and radon. The Board of Regents is asked to consider this information as a basis for policy action and for engaging State agency representatives and other constituent groups from the larger community to advise on further policy matters and practices relating to environmental issues in schools.

This report is presented to the Regents for discussion. As a part of this discussion, the Regents are asked to consider four policy concerns which affect each of the environmental conditions. It is proposed that these and other policy questions be developed further with an advisory committee described below. The four policy concerns are the following:

1) Affirm every child's right to an environmentally safe and healthy learning environment, as stated in the *Regents Bill of Rights for Children*.
2) Affirm every child's and every parent's right-to-know about environmental health hazards in the school environment.
3) Work with other State agencies in addressing environmental health and safety issues in schools.
4) Require schools to report environmental health and safety issues and actions to the State Education Department.

The Regents are also asked for their consent to establish a Regents Environmental Quality Advisory Committee to advise the State Education Department concerning developing, implementing, and reporting related to issues of environmental quality. The charge would be to address the environmental issues raised in this paper and to propose to the Board of Regents policies, regulations, and guidelines to ensure the rights of children and parents to an environmentally safe and healthy school environment based on the best available information and technology. Specific tasks for the Committee could include:

Asbestos
Evaluate current State Education Department policies and regulations for schools to ensure proper and prudent actions.

Electromagnetic Fields
Evaluate current policies and regulations; develop guidelines for prudent avoidance for school use and for informing parents.

Hazardous Waste
Review current State Education Department policies and regulations regarding the siting of new school facilities.

Indoor Air Quality
Review and develop State Education Department policies and standards for construction and renovation, heating, ventilation, air conditioning, building operations and maintenance, and the selection of building, administrative, and instructional materials and supplies which reduce or eliminate the use of hazardous products.

Lead
Develop and disseminate information to the community concerning the harmful effects of lead in homes, especially for preschoolers; stress proper cleanliness and maintenance of school buildings; develop lead abatement project

policies for schools using accurate, state-of-the-art information, consistent with State and Federal regulations; and require that only lead-free materials and supplies be used in schools.

Pesticides
Support and implement, in conjunction with other State agencies, the State Attorney General's recommendations concerning pesticides in schools to help minimize risks associated with toxic pesticide use.

Radon
Evaluate current policies and regulations; survey schools to determine the extent of testing and mitigation; develop capital construction guidelines for minimizing radon.

Based on the advice of the Regents Environmental Quality Advisory Committee, the Regents will identify policy, budget items, and needed legislation that will provide a comprehensive approach to assure that all children have environmentally safe and healthy schools.

ENVIRONMENTAL QUALITY IN SCHOOLS

INTRODUCTION

Although focussed on teaching and learning, our work on education reform must also address the need to maintain a safe, secure, and healthy physical environment. The capacity of children to learn may be impeded if their school environment contains elements which are hazardous to their health. The State Education Department and educators have a responsibility to assure the school community and the public that, based on the best available knowledge, school buildings are safe and healthy.

Section 408 of Education Law provides the Commissioner of Education with the authority to establish criteria for school reconstruction adequate to maintain healthy and safe conditions. Section 155.3 of the Commissioner's Regulations further gives the Commissioner the authority to establish necessary health and safety standards in public school buildings. Federal and State Occupational Safety and Health laws serve to ensure healthy and safe workplace environments for employees. However, students in school buildings are not covered by the laws concerning the health and safety of workplace environments. There also are no provisions in law for a parent's or student's right-to-know about hazardous substances used in their school environment.

The *Regents Bill of Rights for Children* and policy statements on early childhood education and parent partnerships further emphasize the right of children to a safe and healthy learning environment and the responsibility of educators to work with parents as partners to these ends. In the workplace, there are Federal and State laws to ensure employees of a safe and healthy work environment and their right-to-know about hazardous and toxic substances which are in their workplace. It is equally important that all children in our elementary and secondary schools have the right to a safe and healthy learning environment and the commitment of educators to work with parents as partners to these ends. It is the right of parents to be informed and involved with educators to mutually work towards these goals in a prudent and balanced manner.

Reports on problems have escalated public concern to new levels. Frequently covered items include asbestos, lead, pesticides, radon, electromagnetic fields, and other aspects of indoor air pollution, sometimes originating from such common items as new carpeting, copiers, glued roofing, paints, and floor cleaners. Some students and school personnel have experienced serious health problems. When health threats are present, the costs to individual districts and the State Education Department are enormous in terms of staff time and effort, cleanup costs, school closings, and the liability for damage to health. The recent experience of the New York City public schools with closings and delays because of asbestos problems reminds us of the potential adverse impact on education caused by environmentally-based health threats. Careful, well thought out prevention policies and regulations designed to reduce and manage hazardous risks, overall consumption, and disposal of hazardous products should be effective in significantly reducing these unfortunate incidents.

This background paper briefly summarizes the various programs and activities which have been established to respond to environmental concerns. It also indicates where more activity is necessary for the Regents and for the Department to assure that schools are environmentally safe and healthy places for children.

ASBESTOS

I. Problem

Asbestos has been known for several decades to be a human carcinogen based on occupational health studies

of workers who were involved in its mining, manufacturing, or application. The U.S. Environmental Protection Agency (EPA) developed a mathematical model to assess carcinogenic risk, whereby the EPA determined that, if asbestos exposure is eliminated in schools, the potential exists to significantly reduce the overall risk for children, who may be later exposed to asbestos in homes, public, and commercial buildings.[51]

During the 1980s and 1990s, the health and safety concerns associated with asbestos became a focal point for schools nationwide. Largely due to concerns in the community, schools undertook a number of asbestos removal projects throughout this period.

Although occupational exposure to asbestos has been linked to various respiratory diseases and cancers, the mere presence of asbestos within a school building should not automatically be a cause for concern.[50] Asbestos-containing materials which are in good condition can be properly maintained in place for many years with minimal risk to the building's occupants. In fact, there have been a number of schools which have made the decision to remove asbestos, only to create escalated problems due to careless removal practices.

II. Background

Asbestos is not a single substance, but rather a group of naturally occurring minerals which can be processed into materials which are strong, flexible, durable, heat resistant, and resistant to chemical attack. Because of these remarkable properties, asbestos has been widely used in many products, especially in the construction industry. However, it is often difficult to recognize asbestos since the fibers have been added to so many different materials — everything from fabrics to cement.[49]

Asbestos materials become a health concern to people if microscopic fibers are released into the air.[51] This condition may happen when material containing asbestos is being produced, installed, or if material is damaged and fiber release occurs. When inhaled, the body normally expels foreign material by sneezing and coughing; however, some of these microscopic asbestos fibers are carried into the lungs where they may remain permanently. Occupational-based studies often show that, after a latency period of 20 years or more, asbestos fibers may cause changes in lung tissue for some people which may develop into lung cancer and/or a chronic lung disease called asbestosis, both of which can be fatal.[51] Cancer of the lining of the chest and abdominal cavities, or mesothelioma, and other cancers have also been linked to asbestos exposure. Cigarette smokers, especially those who are also exposed to asbestos fibers, have the greatest risk of developing lung cancer.[51] However, the vast majority of asbestos research is based upon only occupational exposure, such as ship building, and not on normal building occupancy — such as in schools.[44]

Because of its unique properties, asbestos has been used in the manufacture of a wide variety of products. Much of it has been used in construction projects, including homes, office buildings, and schools. Due to trends in the construction industry and sometimes even due to building code requirements, many buildings completed prior to 1960 often contained asbestos in their boiler and pipe insulation. In later years, asbestos was frequently installed in ceilings and walls as insulation and fire/sound proofing material.[50] Asbestos was also used in building roof products, floor tiles, cement sheets and pipes, as well as in sheetrock, joint, and plaster patching compounds. Asbestos was even used for decorative purposes.[49]

The Consumer Product Safety Commission banned wall patching compounds containing asbestos in 1977. Sprayed-on asbestos was banned by the EPA in 1978. Banning asbestos in various other manufactured products after 1996 is under consideration by the EPA as well. Certainly, any new school building or reconstructed school building should not be installing or using any products or materials which contain asbestos.

Schools have been subject to asbestos regulations since 1979. The State Asbestos Safety Act of 1979 required public schools to annually inspect for friable asbestos, test for asbestos, and develop plans to abate any imminent hazards. Schools were also required to submit annual asbestos reports to the Commissioner. These requirements provided for no inspector training, nor established protocols. The State Asbestos Safety Act was repealed in 1991, as Federal legislation known as the Asbestos Hazard Emergency Response Act was more comprehensive in scope and depth. Additionally, the Environmental Protection Agency issued in 1982 what was known as the School Asbestos Notification Rule. These regulations required public and nonpublic schools to inspect for friable asbestos, test for asbestos, and notify parents and staff of any friable (crumbly to the touch) asbestos. Like the State Asbestos Safety Act, the School Rule inspected only friable asbestos and the personnel doing the inspections received no asbestos certification or training. Congress, frustrated with the reported deficiencies in the 1982 Rule, passed the 1986 Asbestos Hazard Emergency Response Act, known as AHERA.

The Federal Asbestos Hazard Emergency Response Act (AHERA) of 1986 requires the management of asbestos in school buildings.[3] Asbestos which is managed properly and maintained in good condition poses relatively little risk to students and employees. In fact, asbestos *removal* may actually present a greater risk to building occupants than properly managing asbestos in place, if done inappropriately.[54] Proper management begins with the asbestos inspection by a New York State Certified Asbestos Inspector.[51] After the inspection of asbestos containing building materials, a New York State Certified Asbestos Management Planner will

assess the condition of the asbestos. If the asbestos material is intact, and has no damage which is emitting a release of asbestos fibers, then the asbestos should be left alone and managed in place.[50] When asbestos material is slightly damaged, it can easily be repaired or patched. Damaged asbestos materials may also be enclosed or encapsulated so that fiber release is not possible. The only time asbestos material should be removed is when the building is being demolished, the building is fully renovated, and/or the asbestos is so damaged that it is beyond any repair.[50] It is the responsibility of school districts to decide on how to manage the asbestos containing building material in their school.[3]

The EPA has developed the following five facts associated with asbestos.[50]

FACT I *Although asbestos is hazardous, the risk of asbestos-related disease depends upon exposure to airborne asbestos fibers.*

FACT II *Based upon available data, the average airborne asbestos levels in buildings seem to be very low. Accordingly, the health risk to most building occupants also appears to be very low.*

FACT III *Removal is often not a building owner's best course of action to reduce asbestos exposure. In fact, an improper removal can create a dangerous situation where none previously existed.*

FACT IV *EPA only requires asbestos removal in order to prevent significant public exposure to airborne asbestos fibers during building demolition or renovation activities.*

FACT V *EPA does recommend a pro-active, in-place management program whenever asbestos-containing material is discovered.*

Neither Federal nor State regulations require the removal of asbestos in schools, unless the building is scheduled for demolition or the extent of damage is extensive and poses an immediate asbestos fiber exposure risk.[50]

III. Federal Roles and Regulations

There are several Federal laws which govern asbestos materials in the public and private sector. The following laws apply to public and nonpublic schools any time they engage in asbestos work activities related to the Federal regulation.

The Occupational Safety and Health Act of 1970 (OSHA) established asbestos worker protection standards. The Occupational Safety and Health Administration covers the private sector, including nonpublic schools. This legislation was also adopted by New York State Labor Law under the Public Employee Safety and Health Act (PESHA) and affects the public sector, including public schools, any time asbestos abatement work is done.

The National Emission Standards for Hazardous Air Pollutants of 1973 (NESHAPS) legislation regulates standards for air emissions from renovation and demolition work, including asbestos. The rule governs work in both the private and public sectors and is enforced by the Environmental Protection Agency. The EPA must be notified in advance of renovation and demolition work which is at least 260 linear feet or 160 square feet.

Specific Federal legislation governing asbestos in public and nonpublic schools occurred with the **1982 School Asbestos Notification Rule**. The 1982 School Asbestos Notification Rule was superceded by Congress with the more comprehensive Asbestos Hazard Emergency Response Act of 1986.

The Asbestos Hazard Emergency Response Act of 1986 (AHERA)(40 CFR Part 763)3 regulates the management of asbestos containing building materials in public and nonpublic elementary and secondary schools. AHERA requires schools to do the following in each building that they lease, own, or otherwise use as a school building (§763.85(a)).

- By July 9, 1989, designate a person to ensure that AHERA requirements are properly administered in the school or school district (§ 763.84 (g)).
- Prior to May 9, 1989, inspect each school building which the school leases, owns, or otherwise uses as a school building to identify and assess all locations of asbestos containing building material (§ 763.85 (a)).
- Prior to May 9, 1989, prepare an asbestos management plan for each building which the school leases, owns, or otherwise uses as a school building (§ 763.93). The asbestos management plan, known as the AHERA management plan, must include methods which the school will use to manage asbestos in the school building. Methods commonly referred to as response actions or abatement include one or more of the following: operations and maintenance; repair; encapsulation; enclosure; and removal.
- By May 9, 1989, submit the AHERA management plan for review and acceptance to a State designee agency. (Governor Cuomo appointed the State Education Department as the New York State AHERA agency.)
- By July 9, 1989, begin implementation of the AHERA plan.
- All maintenance and custodial employees (regardless of their specific job functions) must attend at least a two-hour asbestos awareness course. New maintenance and custodial employees must receive this instruction within 60 days following the commencement of their employment (§ 763.92 (a)(1)).

- Any employee working on *any* aspect of an asbestos project must possess current New York State Department of Labor certification in the specific asbestos task which they intend on performing, e.g., asbestos handler, air monitoring technician, etc.
- Short-term workers (telephone repair, electricians, plumbers, etc.) must be informed of the specific locations of asbestos containing building material in the building (§ 763.84 (d)). This should be accomplished through the use of a building diagram with the exact locations of asbestos materials clearly marked.
- Warning labels must be posted in routine maintenance areas (boiler room, pipe tunnel, air handling room, etc.) in order to prominently identify any asbestos containing building material or suspected asbestos containing building material (§ 763.95).
- School building occupants (faculty, staff, parents, legal guardians) must be notified in writing at least once during each school year regarding the status of the building's ongoing asbestos activities, including information on the availability for the public (including school personnel and parents) to review the asbestos management plan during normal business hours (§ 763.93 (e)(10) and § 763.93 (g)).
- At least once every six months following the management plan's implementation, the school must conduct a periodic visual surveillance of all asbestos containing building material and assumed asbestos containing building material in each building which it leases, owns, or otherwise uses as a school building (§ 763.92 (b)) to see if there have been any changes in the condition of the asbestos. The name of the person performing the surveillance, the date, and any changes noted in the condition of the asbestos must be recorded for each surveillance conducted (§ 763.94 (d)). This surveillance is best done by the building's custodian.
- At least once every three years following the management plan's implementation in 1989, the school must perform an asbestos reinspection of all known or assumed asbestos containing building material in each building which it leases, owns, or otherwise uses as a school building (§ 763.85 (b)).

The Environmental Protection Agency has enforcement authority for compliance with the Asbestos Hazard Emergency Response Act. The EPA encourages states to develop comprehensive asbestos legislative programs, at least as stringent as the EPA programs. New York State has EPA approval for its asbestos safety training certification and abatement programs developed by the State Departments of Health and Labor.

State Agency Roles and Legislation

State Education Department

The State Education Department was designated by the Governor to receive and approve the AHERA management plans. The AHERA regulations only require a state agency to receive and approve the plans and to report to the Environmental Protection Agency as requested. The EPA provided no management plan format, materials, or training in meeting many of the AHERA requirements. The Education Department, to assist schools with compliance information and systematic reporting, developed a series of documents for completing the asbestos inspection, developed a training program for school asbestos designees, and developed a two-hour awareness training course for custodians and maintenance staff.

The over 13,000 management plans received by the Department were on the prescribed reporting form known as the Building Management Plan Form-5. This form included the name of the school district and building, the building identification number, name of the asbestos inspector, date of the inspection, amount and areas of friable and nonfriable asbestos, number of bulk samples taken to test for asbestos, the asbestos response action with proposed implementation date, a list of AHERA assurances, and the dated signature of the school asbestos designee. The Form-5 review by the Department involved checking the completeness of the data provided. The Form-5 was not accepted if any of the following was missing:

- complete name of the building missing;
- name of the asbestos inspector missing;
- date of the asbestos inspection missing;
- incorrect number of asbestos bulk samples taken;
- mathematical errors;
- data for walls, ceilings, or floors missing;
- signature of the school asbestos designee missing; or
- date of the designee's signature missing.

The dated school asbestos designee's signature, after the listing of the AHERA requirements, is an assurance that there is complete and intended compliance with AHERA.

With the advent of the comprehensive Asbestos Hazard Emergency Response Act in 1986, in 1991 the New York State Legislature rescinded the 1979 State Asbestos Safety Act. The State Asbestos Safety Act was not as broad in scope or depth as AHERA. To continue the reporting of asbestos conditions to the State Education Department, Education Law § 3602-a was amended by Chapter 53 of the Laws of 1990, which require public schools to submit a report

on the condition of asbestos to the Commissioner once every three years. Reporting every three years coincides with the AHERA triennial reinspections. There is no requirement under AHERA for schools to report triennial reinspection findings directly to the EPA. While Education Law § 3602-a does not apply to nonpublic schools, the Department does invite nonpublic schools to submit this asbestos report. Asbestos reports are reviewed for completeness, data is entered in the computer, and a statewide asbestos report is submitted to the Commissioner. Education Law § 3602-a does not require asbestos reports to the Governor and the Legislature.

The AHERA Building Management Plan Form-5, when completely filled out, does not evidence fraud, improper inspections, improper sampling, improper certification of persons or laboratories, or improperly carrying out any of the AHERA requirements. Quality and ethics of conformance are generally not evidenced on a Form-5.

Under AHERA, the EPA does request from the Department reports on schools which have not completed an asbestos management plan. The EPA does make on-site inspections of schools and writes up notices of noncompliance. The EPA has visited some of the New York City schools and has cited them for violations. The Education Department's role has not been to monitor or enforce the AHERA regulation beyond notifying schools of the AHERA requirements. The EPA sends copies of all New York State notices of noncompliance to the State Education Department for informational purposes. The Department does follow up in writing to such schools, to offer assistance.

Since 1980, the Department has administered Federal and State asbestos grants to public and nonpublic schools. Asbestos grants are competitive and based on the severity of the asbestos condition and the financial need of the school. New York City has consistently been awarded grant monies to abate asbestos.

The State Education Department has also been appointed by the New York Secretary of State (19 NYCRR 441.2(d)) with the "administration and enforcement of the New York State Uniform Fire Prevention and Building Code with respect to buildings, premises, and equipment in the custody of or activities related thereto undertaken by school districts and boards of cooperative educational services (BOCES)." The Department's School Facilities Team reviews and approves public school asbestos abatement capital construction projects. This team issues building permits which must be posted at the work site prior to starting work for public schools outside of New York City. Under Education Law, New York City does not have to submit plans and specifications for approval prior to going to contract. New York City submits, by law, an outline of its intended work. Certification documents for persons designing asbestos work are not required to be submitted to the State Education Department for New York City school asbestos projects.

New York State Department of Labor

Article 30 of New York State Labor Law and Industrial Code Rule 56 (12 NYCRR Part 56)21 affect all asbestos work in the public and private sector, except in owner-occupied, single-family dwellings. The primary goal of Code Rule 56 is to reduce risks to the public associated with exposure to asbestos fibers during asbestos removal, enclosure, repair, and encapsulation. This is accomplished by requiring the licensing of asbestos contractors, establishing asbestos work standards, requiring notification to the State Labor Department for large asbestos projects, notifying building occupants of an asbestos project, establishing and maintaining recordkeeping requirements, and creating an asbestos project inspection and enforcement program. New York State schools performing work which involves the disturbance of asbestos must design and follow work procedures and practices established by the State Department of Labor Industrial Code Rule 56.

The State Department of Labor makes site visits and issues citations, if necessary, to insure asbestos removal, encapsulation, enclosure, and repair work practices are carried out safely and in accordance with Code Rule 56.

State Labor Law Article 30 § 904 and Code Rule 56-1.8 require asbestos abatement contractors to post or otherwise provide written communication to residential and business occupants of a building *ten days prior to the commencement of work on any asbestos project in the building. School building faculty, staff, and students attending the school are considered to be business occupants for school asbestos work and shall receive this written notification*. In the event that the State Labor Department has approved classification of the project as an emergency and the ten-day notification to the public is not possible, then the contractor must provide this written notification as soon as practical after the identification of the project.

New York State Department of Health

Under Article 30 of the State Labor Law, the New York State Department of Health has the authority to approve asbestos safety training programs. The Department of Health reviews and approves all asbestos training providers who wish to provide New York State specific training and establishes minimum training curriculum requirements (Part 73 of Title 10 of State Labor Law). The State Department of Labor will not issue an asbestos license or certificate without first receiving the Department of Health's proof of asbestos training.

Asbestos air samples and suspect construction materials must be analyzed by a laboratory which is approved by *both*

the New York State Health Department Environmental Laboratory Approval Program (ELAP) and the National Voluntary Laboratory Approval Program (NVLAP). This fulfills both New York State (Section 502(2) of the State Public Health Law) and AHERA (§ 763.90(i)(ii)) requirements for asbestos air analysis.

Local Asbestos Laws

New York State Labor Law permits local municipalities to enact local laws and ordinances governing the handling or disturbance of asbestos material, provided they are more effective than Article 30 and Code Rule 56, as determined by the State Department of Labor. This includes asbestos licensing and certification requirements. Communities may also elect to enforce local laws and Code Rule 56, including but not limited to the collection and retention of any monetary penalties. New York City is an example of such an arrangement. The New York City Department of Environmental Protection enforces asbestos statutes within the five boroughs of New York City. New York City asbestos abatement work is governed by the New York City Department of Environmental Protection.

New York State Department of Environmental Conservation

The New York State Department of Environmental Conservation's Division of Hazardous Substance Regulation and Bureau of Municipal Waste issue transportation permits for asbestos waste haulers, asbestos disposal sites, and approve methods for on-site asbestos disposal within New York State.

IV. School Experiences

Since schools began to remove asbestos, there have been numerous problems with contractors, air monitors, architects, and general deviations from asbestos management plans developed by schools. Recently however, two incidents have brought serious attention to asbestos in the schools.

During summer 1991, the Peru Central School District undertook asbestos removal projects which were not called for in its original 1989 AHERA management plan, in three out of five district buildings at an estimated cost of $463,900. The removal projects concluded and the three schools were set to open in September 1991 when it was discovered that the schools had not been properly cleaned following the conclusion of work. Asbestos air samples came back positive for asbestos and the buildings could not open for students. Due to asbestos contamination in the air, the State Labor Department closed the three buildings and a massive cleaning effort commenced. Schools had been closed for two weeks when the district initiated a split-session schedule for students. Eventually, the buildings all passed final asbestos air clearance, but not until the school district had spent $ 3,490,351 to clean and open the buildings. This resulted in Peru Central School District spending a combined asbestos removal project plus building cleanup total of $ 3,954,251.

More recently, the New York City Public Schools have been embroiled in an asbestos related crisis. On August 6, 1993, Mayor Dinkins declared that all New York City public schools would be reinspected for asbestos prior to school opening due to faulty and questionable asbestos management plans. Over the past two and a half years, the School Construction Authority has reportedly discovered that the asbestos bulk samples taken by them often contradict the bulk sample results reported in the AHERA management plan. The result was that construction work thought not to involve asbestos, according to the plan, did indeed contain asbestos.

P.S. # 1 in Manhattan's Chinatown apparently precipitated this incident when it was discovered that renovation work, believed to be a nonasbestos project as reported in the AHERA management plan, resulted in the identification of asbestos. Such discrepancies may be due to differing protocols and technological differences between 1988 and 1993. The School Construction Authority began an in-depth investigation of the asbestos management plans, which resulted in alleged fraud in the conduct of the asbestos inspection process. With the School Construction Authority's ongoing investigation, far more alleged problems with the AHERA management plans and abatement work are emerging. The School Construction Authority is also claiming that schools built in the 1980s contain asbestos. (There is no law that prohibits the use of asbestos and warehouses are permitted to sell asbestos materials. Not all products are clearly labeled, especially foreign made materials.)

Mayor Dinkins formed *Operation Clean House* and immediate asbestos bulk testing started in school facilities in which there were summer school programs. These summer programs were moved to different facilities. A 24-hour-a-day, seven-day-a-week multilingual telephone hot-line was started. The responsibility for asbestos in the schools was transferred from the Board of Education Asbestos Task Force to the New York City School Construction Authority. A quality control protocol program for the new asbestos inspections and an asbestos inspection plan for 1,069 schools were quickly developed by the School Construction Authority. The plan uses the "scorecard" program which identifies damaged facilities. The inspection plan was to begin with the schools identified by the "scorecard" as having wall and ceiling damage. The Board of Education reported 714 schools with damaged surfaces. Of these, 83 had severe damage and will receive the highest priority.

The extent of damaged areas identified under the score-

card program illustrates a continuing lack of building maintenance and extremely poor roofing and parapet conditions. Painting and maintenance in New York City which are over eight feet high must be done by outside contracts. School custodians, by contract, do no work above eight feet.

At this writing, the New York City asbestos situation is still unfolding with more allegations which remain under investigation by the Federal Bureau of Investigation (FBI), the Office of the Inspector General of the New York City School Construction Authority, and the Special Commission of Investigation of the New York City Office of Counsel.

Fortunately, the situations in Peru and New York City are exceptions. Since the inception of AHERA, the school district which has *not* had an asbestos removal project is truly the exception, and rarely have things gone awry. However, millions of dollars have been spent removing asbestos since 1988 and, as the EPA states, managing asbestos in place is most often a school's safest and most cost-effective response action. The following charts estimate spending on asbestos abatement in New York State. The charts are based on data submitted on the 1992 New York State Triennial Asbestos Reinspection Form.

THE ESTIMATED AMOUNT OF MONEY SPENT ON ASBESTOS ABATEMENT BY NEW YORK CITY PUBLIC SCHOOLS

YEARS	AMOUNT SPENT
1988-89	$1,142,037
1989-90	$2,547,369
1990-91	$1,063,927
1991-92	$715,420
Total Amount Spent	**$5,468,753**

THE ESTIMATED AMOUNT OF MONEY SPENT ON ASBESTOS ABATEMENT BY NEW YORK STATE PUBLIC SCHOOLS (EXCLUDING NEW YORK CITY)

YEARS	AMOUNT SPENT
1988-89	$56,119,567
1989-90	$94,931,496
1990-91	$60,889,161
1991-92	$26,917,029
Total Amount Spent	**$238,857,253**

THE ESTIMATED AMOUNT OF MONEY SPENT ON ASBESTOS ABATEMENT BY NEW YORK STATE NONPUBLIC SCHOOLS

YEARS	AMOUNT SPENT
1988-89	$5,408,645
1989-90	$5,944,539
1990-91	$5,916,188
1991-92	$9,140,459
Total Amount Spent	**$26,409,831**

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Based on these data, New York State public and nonpublic elementary and secondary schools expended a total of **$ 270,735,837** for asbestos abatement during the years of 1988 through 1992.

The Asbestos Hazard Emergency Response Act (AHERA) requires all public and nonpublic elementary and secondary schools to reinspect (once every three years from July 9, 1989) all friable (able to be crumbled, pulverized, powdered, or crushed by hand pressure) and nonfriable known or assumed asbestos-containing building material in each school building that they lease, own, or otherwise use as a school building. Based upon a compilation of financial data obtained on the *1992 State Triennial Asbestos Reporting Form*, the following chart displays the amount of money New York State schools spent to comply with the first triennial asbestos reinspection.

AHERA 1992 REINSPECTION COSTS INCURRED BY NEW YORK STATE PUBLIC, NONPUBLIC SCHOOLS, AND BOCES

	AMOUNT SPENT
New York State Public Schools	$ 13,856,983
BOCES	$ 90,455
Nonpublic Schools	$ 1,038,150
Total Spent	**$ 14,985,588**

ELECTROMAGNETIC FIELDS

I. Problem

Since the late 1970s, the question of whether electrical and magnetic fields that emanate from power lines cause human health problems has been the subject of much discussion. While some scientific uncertainty remains, many public health officials and scientists are becoming increasingly concerned about the significantly elevated leukemia rates among children living near power lines. Studies have shown a repeated pattern of response that suggests a relationship between exposure to electromagnetic fields (EMFs) and the increased incidence of childhood leukemia. These health concerns were referenced in the Scientific Advisory Panel's 1987 final report on the New York State Power Lines Project.[28]

II. Background

In 1992, two Swedish studies about EMF exposure and childhood cancer were strengthened by demonstrating a dose-response relationship. Some researchers say that the studies offer the most compelling evidence yet uncovered that shows a link between EMFs and childhood cancer. An earlier study conducted by Dr. David Savitz in Denver demonstrated that the risk of leukemia could be 1.5 in 15,000 per year for children living near high voltage lines. The risk of leukemia is estimated to be 1.0 in 15,000 per year for children *not* living near power lines.[7]

The University of California at Los Angeles and Southern California Edison studied the health records of 36,221 employees who had worked for the company between 1960 and 1988. The researchers looked at the employees' on-the-job exposure to EMFs. The research found no excess cancers or any other health effects in any of the groups in this study. The Swedish study findings, followed by the California study, is typical of the ebb and flow that has characterized the EMF controversy. Much of the research had focused on the strength of the magnetic field, however the Environmental Protection Agency is not certain that the strength of the field is the only important consideration. Other factors to consider are how long the exposure lasts and whether particular characteristics of the field charge rapidly. More research is needed and is under way.

Wherever electric current is flowing, EMFs are present. EMF fields are created by both large and small power lines, lighting fixtures and wiring, electrical equipment and appliances in our homes, schools, and workplaces. Electric fields are found wherever electricity is used, such as in a building's wiring or in an electrical appliance. In fact, the appliance does not even need to be turned on for an electric field to exist. Magnetic fields, on the other hand, are in effect only when electricity is flowing through a wire — such as when an electrical appliance is turned on or power is being sent from its source to another location. An example of this is electrical transmission through power lines. Most U.S. homes have background magnetic field readings ranging from 0.5 to 4 milligauss. The following represents the typical levels of magnetic fields in everyday situations.[18]

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TYPICAL LEVELS OF MAGNETIC FIELDS	
PLACE	**RANGE (IN MILLIGAUSS)**
center of a living room	0.2 - 3
under an electric blanket	5 - 25
hair dryer at 4 inches	3 - 400
operating toaster (at 4 inches)	10 - 60
connection at home (electric meter)	5 - 20
directly under high voltage line	50 - 500
edge of right of way - high voltage line	10 - 200

The closer one is to the source of an electric or magnetic field, the stronger the field. The strength of these fields drops very quickly as one moves away from the field source. In the case of a computer, EMFs are strongest right next to the machine, but at an arm's length their effect is negligible. Even if we were to estimate exposures more precisely, it would be impossible to relate these measurements to potential health effects. This is so because, while some studies suggest an association between EMFs and adverse health effects, including cancer, the nature of this relationship is still under investigation. Therefore, it is not possible to fully assess the magnitude of the risk that may be associated with exposure to the magnetic field in schools.[28]

As the State Department of Health indicates, scientists do not agree on what measures, if any, people should take to prevent possible risks. No one is sure whether reduced exposure translates into reduced risk. Some researchers advocate a policy of "prudent avoidance", whereby people will take affordable steps to reduce their exposure to EMFs while not making major investments to limit exposure. The State Department of Health believes there is not yet enough information to advocate such actions, but would not discourage individuals from adopting that approach. The Department of Health and the Public Service Commission are to convene a panel to examine scientific data and current knowledge to explore developing guidelines.

III. Legislation and Regulations

There are no laws or regulations requiring schools to test for EMFs.

New York State has established standards for exposure to EMFs at the right of way for electric power transmission lines. There are no standards set for exposure for the general environment or school population.

There are no established standards for workplace EMF exposure. However, the International Radiation Protection Association has recommended 5,000 milligauss for a magnetic field limit and 10,000 voltage per meter for an electric field limit. New York City government workers have EMF standards for video display terminal work.

IV. State and Federal Actions

- In 1991, Niagara Mohawk Power Corporation, at the request of the State Public Service Commission and the State Attorney General, conducted a study of EMFs and high power lines located near schools. Thirty-two schools were identified in this study as being located near high power lines.
- The U.S. Congress signed the Energy and Water Development Appropriations Act of 1992 (P.L.102-104), which authorized $ 65 million for the U.S. Energy Office to award grants for the study of EMFs.
- In March 1993, State Attorney General Robert Abrams obtained a voluntary agreement from each of New York State's eight electric utilities to undertake a survey of the location of power lines near schools and the strength of the EMFs which these lines generate.29 The utilities have made individual contact with schools to discuss these findings.

Agency Involvement

- The State Department of Health conducts EMF testing at schools when requested by the respective county department of health. It provides technical information and assistance, and also discusses the issues with members of the community.
- The State Education Department, as requested by schools, provides general information, identifies informational resources, and collaborates with the State Department of Health and the Public Service Commission as needed.

V. School Experiences/Analysis

The Williamsville School District and the Voorheesville School District experienced considerable staff and parent

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concern about power lines adjacent to school buildings. In both cases, Niagara Mohawk Power Corporation was able to reduce the power transmission. The Department of Health also identified areas for prudent avoidance measures and held meetings with staff and parents of these schools.

The eight electric utilities in New York State have identified public and nonpublic schools located near high voltage lines and the strength of the EMFs which these lines generate.[28] The findings of this study were sent to each school which was identified. Schools wishing assistance from their local utility are encouraged to contact it.

Hazardous Waste Sites

I. Problem

Schools are faced with growing environmental concerns as they consider the purchase of land for new construction, the placement of playing fields, and building additions to their existing structures. Public awareness of municipal hazardous waste has brought into question the siting of school facilities.

II. Background

The State Department of Environmental Conservation's 1993 Annual Report on Inactive Waste Disposal Sites in New York State identifies 935 sites located throughout the State. While data on the proximity of these listed sites and other municipal landfills to schools is not immediately available, they have the potential to impact a number of existing or proposed educational facilities in the State. Under current Education Law and regulation, there is no requirement for evaluating the potential impacts of these sites on proposed schools and school expansion projects.

New York State Education Department site standard selection criteria under Education Law Section 408 and Commissioner's Regulation 155.1 include the following:

Size and Location-
State Standards, Future Expansion, Local Community Environment, School Environment, Accessibility

Shape and Contour-
Topography and Landscape, Area for Building, Area for Outdoor Activities, Drainage

Health and Safety-
Odors, Dust, Noise, Water Supply, Sewage Disposal

Hazards-
Gas Lines, Electricity, Traffic (railroads, air, highways), Topography (streams and ravines), Nuisances

Purchase Cost-
Land Acquisition and Development Costs

Development Costs-
Soil Characteristics, Ground Water, Drainage, Grading and Filling, Services

In 1976, the State Education Department published the *School Site Standards, Selection, and Development Manual* detailing these standards. The manual states that hazardous conditions and installations in the vicinity of and on hazardous sites must be avoided. The site environment must provide safe and healthful conditions for building occupants. Sites adjacent to or affected by sources of odors, dust, and other types of pollution and of disturbing noise should be avoided. This manual does not specifically address evaluation of potential impacts from municipal and hazardous waste sites.

Determination of a hazardous waste site is conducted by the State Department of Environmental Conservation through a Preliminary Site Assessment to determine if hazardous waste was disposed of and if a significant threat to the public health or the environment exists. The Preliminary Site Assessment data and evaluations are used to determine what actions may be necessary.[15] These sites are classified as follows:

Classification 1 Sites are defined as causing imminent danger to the environment or public health. They require immediate remedial action and immediate legal action. This classification would be assigned on the basis of a declaration or order of the State Commissioner of Health pursuant to Section 1389-b of the Public Health Law, as occurred at Love Canal in 1978 and 1979. A Classification 1 Site could properly be subject to summary abatement authority of the Commissioners of the New York State Departments of Environmental Conservation and Health. **New York State has no Classification 1 Sites.**

Classification 2 is for sites where information suggests that they pose a significant threat to the public health or the environment. The State Department of Environmental Conservation has recently adopted regulations which define significant threat and the factors taken into account in reaching this determination. These regulations were adopted as 6 NYCRR Part 375, effective May 20, 1992. In making a determination of significant threat, the Commissioner considers a number of factors after finding that hazardous waste has been disposed. They include type of waste present, area and magnitude of impact, the manner of disposal, violations of environmental standards, and conditions relating to surface waters and groundwater at or near the site. In addition, after reviewing the above factors, the Commissioner may determine that the site poses a significant threat in any of the following ways:

- a significant adverse impact upon endangered species, threatened species, or species of concern;
- a significant adverse impact upon protected streams, tidal wetlands, freshwater wetlands, or significant fish and wildlife habitat;
- a bioaccumulation of contaminants in flora or fauna causes adverse ecotoxicological effects in flora or fauna, or leads to a recommendation that human consumption be limited;
- contaminant levels that cause significant adverse acute or chronic effects to fish, shellfish, crustacea, or wildlife;
- a significant adverse impact to the environment due to a fire, spill, explosion, or similar incident, or a reaction which generates toxic gases, vapors, mists, or dusts; and
- where a site is near inhabited buildings, or water supplies, and the New York State Department of Health or the U.S. Agency for Toxic Substances and Disease Registry has determined that the presence of hazardous waste on a site poses a significantly increased risk to public health.

In order to assess these factors, a considerable amount of information must be obtained about the site. In most cases, a Preliminary Site Assessment or equivalent is needed to provide the needed data.

The Department of Environmental Conservation and the Department of Health have issued a revised system to prioritize Classification 2 *inactive hazardous waste sites* for remedial action. The Priority Ranking System establishes a process to help determine which of 532 sites in New York State should be remediated first. These choices must be made because it is impossible to work on all of them at the same time. All Class 2 sites, whether Priority I, II, or III, are scheduled to be remediated. Priority ranking only affects the order in which the sites will be remediated.

In July 1990, a draft priority ranking system was adopted on a trial basis. Priority rankings have been assigned to Class 2 sites and have been included in the Department of Environmental Conservation's Quarterly Status Report since January 1991. Final review and approval of the Priority Ranking System and public notification of its formal adoption were held off until recently when the results of the trial period were fully evaluated and the new inactive hazardous waste site regulations (Part 375) were approved. **New York State has 532 sites in Classification 2.**

Classification 2a includes sites for which additional information is needed before the Department of Environmental Conservation can classify them according to the classes established by the Environmental Conservation Law. Prior to fiscal year 1990-91, sites were added to the 2a category if the disposal of hazardous waste was suspected. Some of these sites will be dropped from the Registry as investigations conclude that hazardous waste was not disposed. Since fiscal year 1990-91, only those sites with known hazardous waste disposal have been added to this category. Most Classification 2a sites will require the equivalent of a Preliminary Site Assessment before they can be properly assessed. In fiscal year 1992-93, 102 Class 2a sites were reclassified to other classes, or delisted, and 10 sites were added, for a net reduction of 92 sites. **In New York, 275 of the 532 Classification 2 sites are further identified by Classification 2a.**

Classification 3 sites are known to contain hazardous waste. However, investigations indicate that they do not pose a significant threat to the public health or the environment. **New York State has 62 sites in Classification 3.**

Classification 4 sites are known to contain hazardous waste (or have contained hazardous waste at one time) and have been remediated or closed, often in conformance with a Department of Environmental Conservation approvable plan. However, they need to be sampled or inspected periodically to ensure that contaminant removal has been complete to determine the effectiveness of contaminant control measures, or to otherwise check the site status. Maintenance at these sites may be required indefinitely, and they will not be removed from the Registry until the maintenance period has ended. **New York State has 56 sites in Classification 4.**

Classification 5 sites are known to contain hazardous waste, but have been completely remediated or closed and require no further maintenance. If all hazardous waste has been removed, or if only an inconsequential quantity remains, these sites may be removed from the Registry. **New York State has 10 sites in Classification 5.**

III. Legislation

Federal Superfund of The Comprehensive Environmental Response, Compensation, and Liability Act. The funding of this Act establishes Federal procedures for investigating, evaluating, and cleaning up hazardous waste sites. Under this Act, the U.S. Environmental Protection Agency compiles a National Priorities List of hazardous waste sites as candidates for Federal remedial response.

The 1986 Superfund Amendments and Reauthorization Act provided over $ 8.5 billion to fund the Federal share of remedial hazardous waste programs.

The Abandoned Sites Act of 1979 - Chapter 282 of the Laws of 1979 was the first New York State law to specifically address the need to identify and clean up hazardous waste sites.

New York State Superfund - Chapter 857 of the Laws of 1982 established an assessment of hazardous waste to create a fund for the clean up of the hazardous waste sites. The *1985 Amendments to the State Superfund under Chapter 38*

required additional activities, including the preparation of quarterly status reports for all hazardous waste sites and the establishment of a site elevation system to select and prioritize sites for remedial action.

The Environmental Quality Bond Act of 1988 enabled New York State to further provide $1.2 billion in funds for the remediation of hazardous waste disposal sites. Legislation in 1990 made $100 million available for closing out nonhazardous waste landfills. This in effect reduced the amount available for hazardous waste remediation to $1.1 billion.

Agency Roles

The New York State Department of Health is responsible for investigating and assessing exposure, determining health significance, and for providing prompt public health intervention. The Department of Health also inspects each site to identify the presence of potentially exposed sensitive populations, thereby identifying nearby schools.

The New York State Department of Environmental Conservation is responsible for identifying and investigating sites for remediation, remedial design, construction and monitoring, and the maintenance of remedial sites.

The State Education Department is responsible for developing site standards for site selection and site development for public schools in New York State. It is also responsible for approving sites for school capital construction, reviewing State Environmental Quality Review Act (SEQRA) requirements for schools, as well as approving plans and specifications for school capital construction.

IV. Schools Information

At present, the State Education Department knows of only two schools located on Superfund Hazardous Waste Sites. The State Department of Environmental Conservation's reporting of hazardous waste sites by site code, site name (often the owner of the site), and county does not include information about the surrounding facilities, such as schools. However, data is available to identify sites that have schools nearby. There are no formal reporting requirements to the State Education Department about the names of schools located on or near hazardous waste sites.

The Department's State Environmental Quality Review Act Public School Environmental Assessment Form, which is to be completed by local school districts for certain capital construction projects, does not address specific hazardous waste site conditions either on school property or adjacent to the proposed capital construction site.

Indoor Air Quality

I. Problem

The U.S. Environmental Protection Agency reports that indoor levels of many pollutants may be two to five times, and occasionally more than 100 times, higher than outdoor levels. This is significant because it is estimated that most people spend as much as 90 percent of their time indoors. The EPA ranks indoor air pollution among the top five environmental risks to public health.[52]

Media reports and complaints made to the State Education Department and the State Department of Health evidence mounting claims of indoor air quality problems in schools. Poor indoor air quality often triggers allergies, respiratory problems, and/or eye irritation, and clearly disrupts the quality of life and the quality of learning for students. Indoor air quality is the investment the taxpayer has in the school physical plant. "A school with an indoor air quality problem is a building whose design, maintenance, or repair is lacking in some respect."[2]

II. Background

The effects of poor indoor air quality are often so subtle that they may go unnoticed and/or are frequently dismissed or attributed to allergies, flu, the common cold, or stress.

Thomas Godar, Director of the Pulmonary Disease Section at St. Francis Hospital and Medical Center in Hartford, Connecticut, contends that children's defenses against airborne contaminants are weaker than adults and they are more susceptible to health problems. Because children are small and their organs are developing, they are especially sensitive to air pollutants, which may immediately affect them and last long after the initial exposure.

Many indoor air pollutants may aggravate past or present medical conditions. The symptoms of individuals with respiratory problems, such as asthma, bronchitis, and emphysema can be aggravated by indoor air irritants.1 Symptoms may also be aggravated in persons taking medication or in persons with chemical sensitivity.

Exposure to indoor air pollutants may result in health effects classified as either acute or chronic. Acute health effects, such as the irritation of mucous membranes, are manifested almost immediately. Chronic health effects, such as cancer and kidney disease, manifest themselves over time. Therefore, the appearance of health effects may or may not coincide with exposure to the causative agents. Adverse health responses to indoor pollutants, such as headache, malaise, and coughing, are subtle and are not always recognized as an air quality problem.

Indoor air contaminants are either particles or gases. Particles generally include tobacco smoke, allergens

(pollen, fungi, mold spores, insect parts, etc.), asbestos fibers, respirable particles (these remain suspended in the air and are breathed deeply into the lungs), and pathogens (bacteria and viruses). Gases include carbon monoxide, radon, formaldehyde, oxides of nitrogen or sulfur, and volatile organic compounds.[51]

Indoor air quality problems are commonly associated with a number of conditions, such as inadequate ventilation, contamination from indoor sources, introduction of outdoor contaminants, microbial contamination, and poor maintenance.[2]

Inadequate ventilation may be caused by faulty design of a ventilation system, improper control of temperature and humidity, or insufficient maintenance of ventilation systems. Inadequate outdoor air supply is often the result of efforts by the school to control energy consumption. Beginning in the early 1970s, districts were faced with the increasing cost of energy which led to efforts to conserve energy. Many districts reduced energy use by increasing the efficiency of the heating plant and by adding insulation and weatherstripping. The amount of fresh air brought into a school was reduced; this decreased the amount of energy needed to heat incoming fresh air. Central air systems were not used and the intakes for individual unit ventilators were closed either by closing the damper or by physically covering the air intake. With less fresh outdoor air entering the building, indoor air contaminants were no longer diluted, causing contaminant levels to increase. This results in increased humidity; reduced human comfort; an enhanced environment for the growth of bacteria, fungi, and other biological contaminants; and higher levels of indoor air pollutants.

Product technology has compounded indoor air quality problems. The number and type of contaminants introduced into indoor air by new construction and furniture products have grown rapidly in the last few decades. Additional sources of indoor pollution include office and copy machines, pesticides, cleaning and maintenance solvents, tobacco smoking, and inadequately vented heating devices. Emissions (off-gassing) from furniture, insulation, carpeting, wall coverings, adhesives, and chemicals used in school laboratories, art rooms, and industrial arts rooms all contribute to indoor air pollution.[38]

Outdoor air pollutants drawn into a school further create indoor air problems. These conditions are most severe when air intake vents are located in the wrong place. For example, intake vents located near roadways or school bus parking areas where engine exhaust enters a building's air supply system or near service areas where garbage and other wastes are stored can introduce contaminant air into the school.38 Other problems arise when school building exhaust vents are located too close to intake vents and exhaust air is drawn back into the building. In most cases of poor indoor air quality, there are generally three accepted ways for managing the problem. These include source control, ventilation, and air cleaning.[52]

Source control is the first step. Air pollutants can be controlled at the source by removing them or by modifying them. A ban on cigarette smoking will eliminate a major contributor to indoor air pollution. By reviewing the ingredients in cleaning and maintenance products, it may be possible to substitute products with less toxic ingredients. For example, odorless latex paint is a good substitute for oil-based paint.[2]

Ventilation can be modified to correct or prevent indoor air quality problems. This is effective when schools are under ventilated or where a specific contaminant source cannot be identified. Ventilation can be used to control indoor air contaminants by diluting contaminants with outdoor air or by isolating or removing contaminants by controlling air pressure relationships. Air cleaning is most effective when used in conjunction with source control and ventilation. It is also effective when the source of contaminants is outside the school. Areas such as shops, art rooms, and science rooms should have local exhaust fans to control contaminants released from site-specific activities.

Building maintenance and custodial care are usually the most overlooked ways to avoid poor air quality. Clean buildings have less dust and dirt and fewer odors and fumes in the air than dirty ones. Badly maintained buildings and leaky walls and roofs can create the conditions which breed molds, fungus, insects, rodents, and other vermin. Furthermore, improper maintenance of the heating, ventilating, and air conditioning (HVAC) system can lead to inadequate ventilation.

Dirty, improperly maintained buildings also seem to invite activities that contribute to more air pollution. Custodians may use cleaners that have strong odors to mask other smells. As the insect and vermin populations grow, pesticide applications may become more frequent. These situations can be avoided, if a building is kept clean and well maintained.

Indoor air quality can also be related to new building construction and renovation projects in schools. Chemical vapors and dust released into the air inside the building may affect the health of exposed individuals. Construction projects which are most likely to cause indoor air quality problems include: roofing with hot tar; insulating (particularly with sprayed-on foam); installation of new carpets, drapes, and furniture; painting; caulking; and demolition. These projects can generate large amounts of dust, and the materials used (such as paints, adhesives, and caulking compounds) contain volatile organic solvents and other chemicals. Space heaters, internal combustion engines, and other construction support activities emit combustion products, such as carbon monoxide. The chemicals and dust

released into the air during construction reach occupied areas of the school through the ventilation system, open windows, doors or hallways, resulting in serious air quality problems and health complaints.[38] The simplest and most effective ways to avoid potential indoor air quality problems are to isolate the work area, ensure that renovation work is scheduled when the school building is not occupied and increase ventilation until odors dissipate.

III. Legislation

There are no Federal or State requirements for schools to test the quality of the indoor air.

There are no standards for indoor air contaminant levels established specifically for children. Occupational standards have been developed for employees, but these standards do not adequately protect children.

IV. State Agency Roles

The New York State Department of Labor is responsible for the enforcement of occupational safety and health standards in public schools (PESHA).

Local health departments (city and county) and the New York State Department of Health are responsible for public health matters. The State Department of Health will assist local health departments to investigate indoor air quality complaints in schools and to develop recommendations.

The State Education Department is responsible for public school compliance with the New York State Uniform Fire Prevention and Building Code. The Department's Central Services Facilities Planning Team approves architect's plans and specifications for renovation and construction of school buildings. This process includes reviewing the details for building HVAC systems. Team staff are guided by the Department's *Manual of Planning Standards for School Buildings*.31 This is the document which is used to determine appropriate HVAC systems in schools. It should be noted that, although this document was reprinted in 1985, it has not been updated or revised since 1977. Many building and HVAC standards thought to be adequate in 1977 are now considered questionable and obsolete. In addition, the 1977 standards may not be sensitive to today's concerns about indoor air quality. In fact, the State Department of Health has stated that the ventilation standards in the *Manual of Planning Standards for School Buildings* are inadequate and should be revised.

V. School Experiences

Schools experiencing indoor air quality problems are not required to report such incidents to the Department. However, the number of schools voluntarily reporting indoor air quality problems has steadily increased over the past few years. These problems are primarily reported to the State Education Department and the State Department of Health by parents and school faculty and staff. The State Department of Health investigated 26 complaints about indoor air quality in schools in 1990, 31 complaints in 1991, 35 complaints in 1992, and 19 complaints (January to August) in 1993. An informal survey of 14 complaints in early 1993 estimate the costs of responding to the incidents.

In addition to fiscal costs, these districts spent an enormous amount of time calling special meetings with the Board of Education, parent groups, union groups, and the media.

SCHOOL INDOOR AIR QUALITY INCIDENT COST ESTIMATES

Air Monitoring and Analysis	**$ 134,246**
Consultant	$ 83,630
Contract	$ 259,901
Legal Fees	$ 29,500
Overtime	$ 25,038
Miscellaneous	$ 120,493
TOTAL (14 schools)	**$ 652,808**

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LEAD

I. Problem

Lead is a poison that affects virtually every system in the body.[45] It is particularly harmful to the developing brain and nervous system of fetuses and young children. There is growing evidence that exposure to even low lead levels can produce verbal, perceptual, motor, and behavioral disabilities in children, as well as hearing impairments, irritability, and delayed physical and neurobehavioral development.[45] Exposure of the fetus to low levels of lead has been associated with neurobehavioral disabilities, shortened gestation, low birth weight, and growth deficits after birth. Children with nutritional problems, such as calcium or iron deficiencies, absorb lead more efficiently than children without these deficiencies. These children may therefore be more susceptible to lead poisoning.

II. Background

Lead is a soft bluish-gray metal which can form chemical compounds. Useful properties of lead include softness, malleability, high density, low melting point, and corrosion resistance. In 1986, the United States produced 808 million pounds of lead from ore and recycled and 1,356 million pounds from scrap.[9] Approximately 76 percent of all lead is used in batteries. Other uses include ammunition, brass, solder, pipes, power and communication cable coverings, lead sheeting for flashing material in construction, soundproofing, gasoline additives, radiation shielding, paint pigments, and plastics.[9] Until the 1950s, lead arsenate was used extensively as an insecticide, particularly in orchards.

There are numerous sources of lead exposure in our environment. Although all U.S. children are exposed to some lead from food, air, dust, and soil, some children are exposed to higher amounts of lead than others. Lead-based paint remains the most common source of lead exposure for most preschool children. Lead-based paint (containing up to 50 percent lead) was widely used in the 1940s. The use and manufacture of lead-based paint started to decline during the 1950s. However, not until 1978 did the Consumer Product Safety Commission ban paint containing more than 0.06 percent lead by weight on residential surfaces, toys, and furniture.[45] Lead-based paint is still available for industrial, military, and marine usage. The Centers for Disease Control estimates that about three million tons of lead remain in an estimated 57 million occupied private housing units built before 1980. The U.S. Department of Housing and Urban Development is particularly concerned with the 14 million housing units believed to contain lead-based paint in an unsafe condition and the 3.8 million deteriorated units which are occupied by young children.

A child does not have to eat paint chips to become poisoned by lead. Children may ingest dust and soil contaminated by lead-based paint which has flaked or chipped as it aged or which has been disturbed during home maintenance or renovation. Lead dust and soil ingested by children putting their hands into their mouths is now recognized as a major contributor to the total body burden of lead in children.[45] As part of normal play, ingestion appears to be a more significant pathway than inhalation for young children.

Lead levels are typically low in ground and surface water, but may increase once water enters a water distribution system. Drinking water can be contaminated within the plumbing system by lead connectors (goosenecks), lead service lines or pipes, lead-soldered joints in copper plumbing, lead-containing water fountains and lead-lined water coolers, and lead-containing brass faucets.

Lead pipes are often found in homes and schools built before the 1920s. Pipes made of copper and soldered with lead came into use during the 1950s. Lead leaching from copper pipes with lead-soldered joints represent the major source of water contamination in homes and schools.[48]

Hobbyists may also inadvertently expose themselves and their families to lead. Activities associated with lead exposure include furniture refinishing, stained glass work, indoor rifle ranges, home repair and remodeling, pottery, and ceramics.[17]

The EPA ordered the reduction of lead in gasoline during the 1970s and 1980s. The 1990 amendments to the Clean Air Act prohibit the use of lead as a gasoline additive no later than December 31, 1995. While leaded gasoline has quickly become less of a source of airborne lead, other industrial activities remain localized concerns. Localized exposures to lead include burning solid waste in incinerators and sand-blasting or demolishing lead painted metal structures, such as bridges.

In 1980, 47 percent of domestically-produced food and soft-drink cans were lead soldered. By 1989, only 1.4 percent of domestically-produced cans were lead soldered.45 Lead in food may come from the soil in which the plant is grown. It may also come from contact with lead solder or lead-glazed containers used to store food. In July 1993, the U.S. Food and Drug Administration proposed a rule to prohibit the use of lead solder in all cans, imported and domestic, that contain food.

III. Federal Legislation

- The Safe Drinking Water Act (1976) set standards for drinking water quality.
- The Safe Drinking Water Act Amendments of 1986 banned lead pipes - defining lead-free plumbing pipes as having not more than eight percent lead and plumbing solder as having not more than 0.2 percent lead.
- Public Law 100-572, the Lead Contamination Control

Act of 1988 (LCCA), amended the Safe Drinking Water Act. The LCCA required the U.S. Environmental Protection Agency to publish a list of lead-lined water coolers (with manufacturer model number) and the recall of these lead-lined water coolers and monetary compensation by the manufacturer to schools for return of the cooler. Schools were required to stop using these coolers immediately or to test the water for lead content. In conjunction with the LCCA, the EPA published *Lead in School Drinking Water: A Manual for School Officials to Detect, Reduce, or Eliminate Lead in School Drinking Water*. The EPA stated that the goal of this document was to:

- provide general information on the significance of lead in school drinking water and specifically its effects on children;
- provide information on how to detect the presence of lead in school water and how to pinpoint its source;
- provide advice on the steps to take to reduce or eliminate lead in school drinking water; and
- provide information necessary to train school personnel in water sampling and remedial programs.

The document provided detailed instruction on how to develop a school building plumbing profile and test for lead in the water system. Although testing lead in water was, and is, voluntary (unless the school is its own water supplier), the school community must be informed of the results of any testing which is performed. The State Department of Health is responsible for implementing lead in drinking water programs under the LCCA in New York State.

- In 1992, Congress passed the Residential Lead-Based Paint Hazard Reduction Act. Key elements of this include: training and certification programs, developing laboratory protocols, developing public education information, and developing health standards for exposure.
- No Federal legislation requires testing schools for lead-based paint, soil, or dust.

State Legislation

The newest legislation in New York State which addresses the lead issue is the Lead Poisoning Prevention Act - Chapter 485 of the Laws of 1992 (amendment to the State Public Health Law). The principal thrust of the legislation involves mandated blood lead testing of all children under age six by health care providers (§1370-c(2)). Any elevated blood lead levels will be reported to the health officer of the health district in which the child resides (§1370-e) and to the State Department of Health for inclusion in a statewide registry of children with elevated lead levels (§1370-a(2)(c)). A certificate of lead screening must be provided to each child's parent or legal guardian following this mandated screening (§1370-c(3)). This certificate serves as proof that the child has been tested for lead. Each child care provider, public and private nursery school and preschool licensed, certified, or approved by any State or local agency shall, prior to or within three months after initial enrollment of a child under six years of age, obtain from the parent/legal guardian proof of this lead screening (§1370-d). Should the parent/legal guardian be unable to present this proof, it is then the responsibility of the child care provider, principal, teacher, owner or person in charge of the nursery school or preschool, to provide information on lead poisoning prevention. In addition, they are also responsible for referring the family to their primary health care provider or the local health care authority for blood lead level screening of the child (§1370-d(2)).

An environmental assessment of areas a child frequents will be conducted by the State Department of Health for children with elevated blood lead levels in order to determine the possible source of the child's lead poisoning and to prescribe methods to reduce and/or eliminate the source (§1373 (2)). This process could lead to an environmental assessment of the school if the child's home does not appear to be the basis for the elevated blood lead level. Once the origin of the child's lead contamination is determined, the State Department of Health, or its designee, is empowered to order the elimination, confiscation, or recall of this lead source. Potential causes of lead poisoning include lead-based paint, lead-contaminated soils, lead pipes supplying drinking water, lead-glazed tableware and china, crystal, or other consumer products.

There is nothing in the legislation that would require or allow a school to deny admission to a child under the age of six who has not had a blood lead test.

State Roles

- The State Education Department provides information to schools about current lead work standards and the status of lead legislation.
- The State Department of Health is responsible for administering, developing, and enforcing lead legislation. The Department of Health is also the agency which identifies and assesses public health hazards.

IV. School Experiences

In 1990, the State Education Department and the State Department of Health distributed the EPA's *Lead in School Drinking Water: A Manual for School Officials to Detect, Reduce, or Eliminate Lead in School Drinking Water* to all public and nonpublic schools statewide. While the LCCA legislation does not require testing the school's drinking water

system, it does require that parents and staff be notified of any and all testing results should the school decide to test. There is no reporting of school compliance efforts to test for lead in water coolers. However, in summer 1991 the State Department of Health surveyed the public schools in the State to determine what they had done in response to the EPA's recommendation. The Department of Health sent questionnaires to 700 school districts and received 61 percent or 425 responses. The Department of Health found the following from this survey.

Overall, the questionnaire results indicated that most school districts have completed assessments (85 percent of those reporting). Of the 5,682 water sample results reported, 4,252 (27 percent) were above the current EPA lead in drinking water action level for schools (15 parts per billion). Approximately 67 percent of the districts reported at least one sample above this action level. In most cases, the school districts indicated that some sort of remedial action was initiated.

The State Department of Health regulations for the Lead Poisoning Prevention Act are not final. Therefore, school involvement is very limited at this time. One principal in New York City, however, interpreted the law on his own and sent out notices that children entering the school would be required to show evidence of a lead blood test prior to starting school. A parent objected and challenged the principal's position on the issue. Again, with no systematic feedback from the schools, it is difficult to know how, when, and if schools are informing and educating parents about testing blood for lead.

One school district on Long Island, acting under community pressure, has voluntarily removed lead-based paint from all of its school buildings. There are no State approved lead abatement training programs, lead certification programs, or lead abatement work protocol guidelines.

PESTICIDES

I. Problem

Pesticides, a diverse group of toxic chemicals, are widely used in agricultural production, in factories and offices, in homes and restaurants, and in schools. Schools, with their kitchens and cafeterias, athletic fields and playgrounds, classrooms and offices, are regularly treated with a variety of pesticides.[26] An increasing body of scientific data on the potentially harmful effects of pesticide exposure on people and the environment raises concern about the broad use of these toxic substances. The commonplace, widespread use of pesticides is both a major environmental problem and a public health issue.[26]

II. Background

Pesticides are designed to poison and kill living organisms.[26] Many insecticides work as nerve poisons. The active ingredients in pesticides are those which are specifically designed to kill, repel, or otherwise control the target pest. While the U.S. Environmental Protection Agency (EPA) registers active ingredients, inert ingredients are not identified on the product label, nor are they fully accounted for by the EPA. Although inert chemical identification is lacking, it has been reported that the inert chemicals in some products have the potential for causing serious health effects.[25] Pesticides do not dissipate immediately following application.[26] In fact, some pesticides are designed to remain active over a period of time. As a result, residual amounts of pesticides may be detected for weeks and months following a pesticide application. Many schools routinely apply pesticides for preventive purposes. Residuals may be present for great lengths of time, especially inside buildings away from sunlight and soil bacteria which may assist in breaking down the pesticide.[26]

Currently, at least 50 different pesticide ingredients are applied in school buildings and grounds throughout New York State. Students and staff may be exposed to pesticides used in schools through inhalation, swallowing, or absorption through the skin and eyes. Pesticide exposure can cause both acute and chronic health effects. Acute exposure indicators include irritation to eyes and throats, skin rashes, nausea, upper respiratory distress, and, in the most extreme circumstance, death. According to Dr. Marion Moses, President of the Pesticide Education Center in San Francisco, California, organophosphate pesticides, such as diazinon, dursban, and malathion, cause acute illnesses.[12] Chronic long-term health problems may include cancer, reproductive impairment, and neurological impairments. By the time chronic ailments become apparent, however, it may be difficult to identify the specific pesticide involved.[12] The following chart illustrates some potential health effects of some pesticides used in schools or on school grounds.[26]

Pesticides Used in Schools or on School Grounds		
Pesticide (trade name)	**Sample Target Pests**	**Potential Health Effects**
Chloropyrifos (Dursban)	*Insecticide:* ants, termites, fleas, mosquitos, cockroaches	headache, nausea, dizziness, abdominal cramps, vision problems, persistent weight loss, toxic psychosis, convulsions
Bendiocarb (Ficam)	*Insecticide:* ants, fleas, ticks, cockroaches, silverfish, crickets	diarrhea, muscle weakness, dizziness, headache, blurred vision, sensory and behavioral disturbances, spasms, sweating
Acephate (Orthene)	*Insecticide:* cockroaches, ants	headache, flu-like symptoms, possible human carcinogen, reproductive effects, interferes with nerve impulse transmission
Cypermethrin (Demon)	*Insecticide:* cockroaches, ants	allergic dermatitis, flu-like symptoms
MCPP (mecoprop)	*Herbicide:* broadleaf weeds, e.g., clover and dandelions	skin irritation, vomiting, unconsciousness, coughing, dizziness, sensory and behavioral disturbances, spasms, sweating
Dicamba	*Herbicide:* broadleaf weeds	skin irritation, vomiting, unconsciousness, coughing, dizziness, sensory and behavioral disturbances, spasms, sweating
2,4-D	*Herbicide:* broadleaf weeds	vomiting, diarrhea, anorexia, ulcers of the mouth and pharynx, damage to the liver, kidneys, and central nervous system

In 1991, State Attorney General Robert Abrams initiated a statewide school survey and investigation into school pesticide use due to safety concerns associated with children's exposures to pesticides used in schools. Based on the investigation's findings, a report was developed entitled, *Pesticides in Schools: Reducing the Risks.*[26]

Based on this survey and investigation, 331 schools were surveyed statewide. In this report, the Attorney General, Albany Medical Center, and the State Department of Health strongly encouraged schools to implement a series of recommendations, including initiation of a statewide school integrated pest management policy to reduce the use of pesticides in schools.

An integrated pest management strategy does not include preventive or routine pesticide applications. Instead, it uses pest-specific pesticide control methods only if an actual pest problem exists, and then only as a last possible resort with use of the least toxic formula available. Some schools have already voluntarily adopted integrated pest management strategies and are realizing the benefits of reduced risks, reduced costs and positive publicity.

Pursuant to Governor Cuomo's 1990 State of the State

Message, an Interagency Task Force on Occupational Safety and Health was created to assist in formulating policies, training, and procedures to achieve a safer and healthier workplace. As a result of the work of this Interagency Task Force, Executive Chamber Policy Memorandum 93:13, on integrated pest management directed each State agency and authority to establish an integrated pest management program at selected sites. The program is to be phased-in over a period of five years during which time it will be evaluated for its effectiveness in controlling pests and its economic impact.[6] The New York State Office of General Services implemented an integrated pest management policy in 1992.[34] This policy mirrors the pest management policy already in use by the Federal General Services Administration.

Integrated pest management programs are being initiated nationwide. In October 1991, on a large scale, the San Diego, California, schools agreed to implement a comprehensive integrated pest management policy. In Maryland, the Montgomery County public school system adopted an integrated pest management approach. It reduced its pesticide use by 90 percent between 1988 and 1990 and has become a model for approximately 500 public schools throughout Maryland. Dade County, Florida, the fourth largest school system in the United States, has implemented an integrated pest management program with the goal of eliminating all pesticide use in its public schools.

III. Legislation

Federal laws governing pesticides pertain to the manufacturing and registration of chemicals used in pesticides.[51]

New York State legislation is directed at both outside and inside pesticide application, notification, and certification. The New York State Department of Environmental Conservation is currently engaged in negotiated rule-making for inside building pesticide application and notification.

IV. Agency Roles

- *New York State Department of Environmental Conservation*
  Regulates and enforces activities relating to the sale, use, transport, storage, and disposal of pesticides. Requires pesticide applicator training and issues pesticide applicator certification.
- *New York State Department of Health*
  Assesses the potential risk for adverse health effects from chemical - pesticide exposure and maintains a pesticide poisoning registry.
- *New York State Department of Labor*
  Enforces compliance with employee exposure levels, including pesticide exposure levels.
- *New York State Public Service Commission*
  Responds to complaints and questions concerning the use of pesticides on utility rights-of-way.
- *New York State Education Department*
  Provides information to schools regarding pesticide applicator certification and integrated pest management. Cooperates with other State agencies.

V. School Experiences

Numerous incidents have occurred over the years involving the misapplication of pesticides in schools. A particularly costly incident occurred on October 27, 1992, when the Westchester County Department of Health closed the Eastchester High School after students and staff complained of nausea, headaches, eye irritation, and respiratory problems.26 The day before, an exterminator had over-applied the insecticides resmethrin, chlorpyrifos, and diazinon inside the school building. The building remained closed for three weeks. This one incident cost the school district an estimated $243,000.

Some schools in the State have begun implementing pest management programs designed to reduce the use of pesticides. The Albany City School District's Thomas O'Brien Academy of Science and Technology recently implemented "no-pesticide" pest management. It is working so well that the school district may expand the program. In 1992, the Canajoharie Central School District adopted a "least toxic" pest management policy, with the ultimate goal of eliminating all pesticide use. In 1991, the Schalmont School District in Schenectady County began replacing the chemical fertilizers, insecticides, and herbicides used to treat athletic fields with organic compost mix. In 1986, the Kenmore-Tonawanda School District ordered a moratorium on using pesticides at its 12 schools to determine health and safety effects on the school district's 10,000 students and teachers. Since then, the school district has continued to use "least toxic" pest management practices.

Adopted written policies, as well as involving the entire school community, can help produce the most appropriate, acceptable, and least - toxic pest management approach. The Saranac Central School District reported that in 1991 it informally adopted a working written policy providing that pesticides shall be used only as a last resort, if other nonchemical and less toxic pest controls are proven ineffective. The policy also provides for posting warning signs, various safety precautions, appropriate training for staff, and recordkeeping.

RADON

I. Problem

The U.S. Environmental Protection Agency, as well as major national and international scientific organizations, have concluded that radon is a human carcinogen and constitutes a substantial health risk. Early concern in the 1980s about indoor radon focused primarily on the hazard of radon in the home. More recently, the EPA has conducted extensive research on the presence and measurement of radon in schools. Initial reports from some of those studies prompted EPA Administrator William Reilly in 1989 to issue a recommendation warning of the need to test the nation's schools for the presence of radon.[45] Because indoor radon concentrations vary with building construction, ventilation characteristics, and the underlying soil and rock, the only way to determine if elevated radon concentrations exist is to test.[47]

II. Background

Radon is a naturally-occurring colorless, odorless, and tasteless radioactive gas.[46] It comes from the natural breakdown (decay) of uranium which is found in soil and rock all over the United States.[47] It travels through soil and enters into buildings through cracks and other holes in the foundation. Eventually, it decays into radioactive particles (decay products) which become trapped in our lungs. As these particles decay, they release small bursts of radiation.[51] This radiation can damage lung tissue and in time lead to lung cancer. EPA studies have found that radon concentrations in outdoor air average about 0.4 picocuries per liter (pCi/L) and about 1.3 pCi/L indoors. However, radon and its decay products can accumulate to much higher concentrations inside a building.

Prolonged exposure to elevated radon concentrations causes an increased risk of lung cancer. No other condition or illness is known to be associated with radon exposure at this time. Like other environmental pollutants, there is some uncertainty about the magnitude of radon health risks. Of all the annual lung cancer deaths each year, the EPA estimates that about 14,000 may have been related to radon. Although smoking is clearly the major cause of lung cancer, it is unclear how many lung cancers may be caused by the combined effects of radon exposure and smoking.[47] An individual's risk of developing lung cancer from breathing radon decay products varies. A person's risk of contracting lung cancer from radon depends on three factors: the level of radon; the duration of exposure; and the individual's smoking habits. Smoking combined with radon is an especially serious health risk.

It has been reported that children have a greater risk than adults for certain types of cancer from radiation, but there are currently no conclusive data on whether children are at a greater risk than adults from radon.[47]

The EPA has established an action level of 4 pCi/L based largely on the ability of current technology to reduce radon concentrations to that level or below. The exposure to a radon level of 4 pCi/L over a lifetime is estimated to be associated with smoking four cigarettes per day. The following charts estimate radon risk to adults.[56] Children may be at higher risk.

Radon Risks for Smokers		
Radon Level	If 1,000 people who smoked were exposed to this level over a lifetime.	The risk of cancer from radon exposure compares to:
20 pCi/L	About 135 people could get lung cancer.	← ← 100 times the risk of drowning.
10 pCi/L	About 71 people could get lung cancer.	← ← 100 times the risk of dying in a home fire.
8 pCi/L	About 57 people could get lung cancer.	
4 pCi/L	About 29 people could get lung cancer.	← ← 100 times the risk of dying in an airplane crash.
2 pCi/L	About 15 people could get lung cancer.	← ← 2 times the risk of dying in a car crash.
1.3 pCi/L	About 9 people could get lung cancer.	Average indoor radon level.
0.4 pCi/L	About 3 people could get lung cancer.	Average outdoor radon level.

Radon Risk If You've Never Smoked		
Radon Level	If 1,000 people who never smoked were exposed to this level over a lifetime.	The risk of cancer from radon exposure compares to:
20 pCi/L	About 8 people could get lung cancer.	← ← The risk of being killed in a violent crime.
10 pCi/L	About 4 people could get lung cancer.	
8 pCi/L	About 3 people could get lung cancer.	← ← 10 times the risk of dying in an airplane crash.
4 pCi/L	About 2 people could get lung cancer.	← ← The risk of drowning.
2 pCi/L	About 1 person could get lung cancer.	← ← The risk of dying in a home fire.
1.3 pCi/L	Less than 1 person could get lung cancer.	Average indoor radon level.
0.4 pCi/L	Less than 1 person could get lung cancer.	Average outdoor radon level.

From numerous radon studies conducted by the EPA throughout the country, it has been found that many factors contribute to the entry of radon gas into a school building. Radon levels may vary from room to room within the same school building. Factors which determine why some schools have elevated radon levels and others do not are:[47]

- the concentration of radon in the soil gas (source strength) and permeability of the soil gas (gas mobility) under the school;
- the structure and construction of the school building; and
- the type, operation, and maintenance of the heating, ventilation, and air-conditioning system.

Depending on their design and operation, heating, ventilation, and air-conditioning systems can influence radon levels in schools by:[47]

- increasing ventilation (diluting indoor radon concentrations with outdoor air);
- decreasing ventilation (allowing radon gas to build up);
- pressurizing a building (keeping radon out); and
- depressurizing a building (drawing radon inside).

The frequency and thoroughness of HVAC maintenance plays an important role in the control of radon levels. For example, if air intake filters are not periodically cleaned and changed, this can significantly reduce the amount of outside air ventilating the inside of the building. Less ventilation allows radon to build up indoors. There are some things which schools can do about radon, even before testing. For schools that have mechanical ventilation systems, the strategy is to keep them operating and to have them checked as frequently as needed to assure that they are in good repair. Often that is all that is needed to keep the radon level in the school well below acceptable limits.

III. Legislation

There are *no* Federal or State laws or regulations requiring schools to:

1) conduct radon tests;
2) report any voluntary radon testing; or
3) notify the school community of any radon tests.

IV. Agency Roles

The New York State Department of Health is responsible for monitoring, regulating, and setting standards for radiation. The agency provides technical assistance and conducts radiation studies.

The State Education Department is responsible for providing information to schools and assisting with resources, such as identifying available grant money for remediation and BOCES Health and Safety services.

V. School Experiences

Under an EPA grant, the State Department of Health is conducting radon tests in selected schools which are geographically located where there is already evidence of high levels of radon in homes. Approximately 60 public school buildings (out of approximately 7,000 school buildings) have been tested by the State Department of Health for radon. Reports indicate that roughly 85 percent of the rooms tested have less than 4 pCi/L, 14 percent have between 4 pCi/L and 20 pCi/L, and one percent of the rooms tested have greater than 20 pCi/L. A few rooms not occupied by students, such as storage and crawl spaces, have measurements over 100 pCi/L.

The State Education Department, in January 1991, issued *Radon Detection and Control in New York State Schools: A Recommended Program Guideline*.[33] The number of school districts or school buildings which have tested for radon is unknown. Additionally, testing results and/or mitigation activities are also unknown. This is due to the fact that schools are not required to report such information. However, an informal telephone survey to 29 BOCES Health and Safety Offices (serving 650 school districts) reported that 91 school districts expressed interest in and initiated radon testing programs. (It is not known if testing was initiated by the prompting of the Department's Guidance Document, school interest, or community interest.) Of these 91 districts, a reported 22 school districts have radon levels which exceed the EPA action level of 4 pCi/L. There is no information on if and/or how these districts have reduced their radon levels. There is no information on whether any mitigation efforts resulted in capital building project submissions to the Education Department, nor is any cost information available.

Many schools have informally stated their reluctance to pursue radon testing for the following reasons.

- Schools are waiting for issuance of final Federal and/or State radon regulations. Schools do not want to have to retest and expend additional money for new radon testing.
- Schools realize that radon remediation and abatement methods for elevated radon levels primarily may consist of operations and maintenance activities, such as caulking, sealing foundation cracks, cleaning air filters, and balancing the HVAC system. And unlike capital construction projects, operations and maintenance activities do not generate State Aid.
- Many schools are concerned that the technology for abating radon in schools may be costly and may not effectively lower the radon concentrations.

Conclusion

This paper has presented facts on school environmental issues which form the comprehensive theme of school indoor and outdoor environmental quality. Specific recommendations associated with asbestos, radon, electromagnetic fields, lead, pesticides, indoor air quality, and hazardous waste sites have been presented. However, only through the affirmation of every child's right to an environmentally safe and healthy learning environment, as stated in the *Regents Bill of Rights for Children*, and of every child's and parent's right-to-know about environmental health hazards in the school environment, can these recommendations be achieved.

The State Education Department, through *A New Compact for Learning* and the *Regents Bill of Rights for Children*, must stress the responsibility of both public and nonpublic schools to maintain a safe, secure, and healthy school environment. The State Education Department must foster and facilitate an atmosphere of interagency, school, and parental cooperation and collaboration to fulfill this goal.

Next Steps

To carry out action on this background paper and its recommendations, the following steps are proposed.

1) The Board of Regents will review the background paper on *Environmental Quality in Schools* and its recommendations at the October 1993 meeting.

2) A Regents Environmental Quality Advisory Committee will be established by December 1993 with appropriate charges.

3) By February 1994, the Regents Advisory Committee will develop a draft policy affirming every child's right to an environmentally safe and healthy learning environment and every parent's right-to-know about environmental health hazards in the school environment and other key policy considerations.

4) At the March 1994 Board of Regents meeting, recommended School Environmental Quality Policies will be presented for approval. The policy statements will include recommendations for legislation, regulation, and budget requests.

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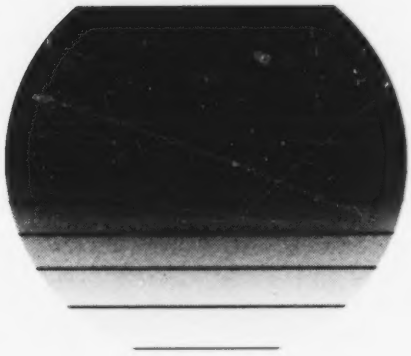

APPENDIX D: SUMMARY OF RECOMMENDATIONS

PUBLIC HEARINGS ON THE

ENVIRONMENTAL QUALITY IN SCHOOLS

REGENTS ADVISORY COMMITTEE ON ENVIRONMENTAL QUALITY IN SCHOOLS

ALBANY, NEW YORK • MARCH 16, 1994
NEW YORK CITY • MAY 12, 1994

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I. BACKGROUND

Since 1988, the New York State Board of Regents has demonstrated concern regarding environmental health and safety issues. Most recently, in October 1993, the New York State Board of Regents reviewed a background paper on ***Environmental Quality in Schools***. The paper detailed the effects of some health and safety issues on students and school personnel. As a result, on October 14, 1993, the Regents established the Advisory Committee on Environmental Quality in Schools with the charge of developing policy recommendations for consideration by the Board. With Regent James Dawson of Peru and Regent Saul Cohen of New Rochelle as cochairs, the Advisory Committee membership includes representatives from the State Legislature; other State agencies with responsibility for environmental or health matters; school districts, including teacher union representatives, superintendents, district superintendents, school boards, and building and grounds superintendents; parents; and the New York City Mayor's Office.

In December 1993, the Advisory Committee met for the first time and explored potential policy issues on hazardous waste, pesticides, asbestos, lead, indoor air quality, electromagnetic fields, and radon. Again in January, March, April, and May of 1994, the Advisory Committee met to clarify issues and concerns in the environmental health areas.

To assist in its deliberations, the Advisory Committee convened two public hearings:

- The first public hearing was on March 16, 1994, in Room 5A-B of the Education Building in Albany, New York.
- The second public hearing was on May 12, 1994, in the auditorium of the Murry Bergtraum High School in New York City (Manhattan).

II. PUBLIC HEARINGS

The Education Quality in Schools public hearings had the following structure:

ALBANY PUBLIC HEARING (March 16, 1994)

- Welcome and opening remarks
- Called to order at 11:00 a.m. and adjourned at 5:15 p.m.
- The Albany Public Hearing was moderated by the Advisory Committee cochairs, Regent James Dawson and Regent Saul Cohen —
  - Testimony was presented within focused panel discussion as related to the environmental quality of schools:

    Hazardous Waste and Pesticides
    Asbestos and Lead
    Indoor Air Quality
    Electromagnetic Fields and Radon
    Overall Policies

  - To allow time for everyone who wished to speak, a 3-minute presentation schedule was imposed on each testifier, followed by a 15-minute discussion period among panelists and Advisory Committee members.
  - Time was allowed at the end of the hearing for individuals to testify who had not preregistered to speak.

NEW YORK CITY PUBLIC HEARING
(May 12, 1994)

- Welcome and opening remarks
- Called to order at 1:00 p.m. and adjourned at 5:00 p.m.
- Testimony and discussion were moderated by the Advisory Committee cochair, Regent James Dawson —
  - Testimony was presented on the following topics related to the environmental quality of schools:

    Asbestos
    Electromagnetic Fields
    Hazardous Waste
    Indoor Air Quality
    Lead
    Pesticides
    Radon
    Overall Policies

- Following each group of five testifiers, there was a discussion period between testifiers and Advisory Committee members.
- Time was allowed at the end of the hearing for individuals to individuals to present further testimony.

  (See the Attachment for a listing of persons who presented testimony at the Albany and New York City Public Hearing.)

III. Purpose of Public Hearings

Education reform, as envisioned in ***A New Compact for Learning*** and the ***Regents Bill of Rights for Children,*** should include policy directions on maintaining safe, secure, and healthy school environments. Increasing concern about the effects of environmental conditions on human health and knowledge of children's increased susceptibility to certain conditions have resulted in parents, school personnel, and public officials raising questions related to the quality of the school environment.

The Regents Advisory Committee on Environmental Quality in Schools invited testimony from concerned and interested parties at two public hearings to discuss the effects of health and safety issues on environmental quality in schools. Environmental issues that were addressed in the hearing included: asbestos, electromagnetic fields and radon, hazardous waste and pesticides, indoor air quality and lead. Testifiers were asked to consider recommendations for policy action in their remarks.

Specifically, testifiers were asked to consider the following policy concerns which affect each environmental condition:

- Schools will provide written information, as prepared and distributed by appropriate agencies, to children and their legal guardians about the health and safety effects of environmental issues and also serve as a role model for environmentally responsible behavior.
- The Regents will affirm every child's right to an envtronmentally safe and healthy learning environment, as state in the ***Regents Bill Rights for Children***.
- The Regents will affirm every child's, parent's, and employee's right-to-know about environmental health hazards in the school environment.
- The State Education Department will work with other State agencies to develop a single set of guidelines relating to environmental health and safety issues in schools and update appropriate materials as needed.
- Schools shall report environmental health and safety incidents and actions to the State Education Department, as defined and prescribed by the Commissioner of Education.
- The State Education Department will analyze and disseminate information or otherwise act appropriately concerning health and safety incidents and actions reported by schools.
- Environmental policies, requirements, and guidelines should apply to both public and nonpublic elementary, middle, and secondary schools.
- State Aid shall be available to schools for environmental health and safety operations and maintenance activities, without diminishing State Aid available for instruction.
- Schools shall use, when and where possible, the least, known and available hazardous and/or toxic substances for instructional and building purposes.
- Where and when occupational safety and health rules apply to employees, students in similar activities should be afforded similar appropriate safety and health protections.
- The Commissioner of Education will be granted the authority to withdraw a Certificate of Building Occupancy in schools not in compliance with environmental laws and regulations or in buildings that present a health hazard, as determined by the State Department of Health.

IV. RECOMMENDATIONS

Individuals presented comments and, in most cases, submitted written testimony related to the public policy concerns listed above. Following is a summary of major recommendations from the oral and written testimony for the Albany and New York City Public Hearings which is categorized within the areas of **asbestos, electromagnetic fields, hazardous waste, indoor air quality, lead, pesticides** and **overall policies**:

ASBESTOS

State-level Focus:

- Exercise caution in enacting new regulations since adequate laws, rules, and regulations currently exist that address asbestos containment and removal.
- Explore State waiver process for nonrepairable floor tiles to be consistent with the standards being used in New York City.
- Provide fiscal relief to schools in the area of asbestos floor tiles.

ELECTROMAGNETIC FIELDS

School-level Focus:

- Plan new construction away from fixed EMF fields.
- Use existing space already exposed to fixed EMF fields only intermittently, if at all.
- Keep adequate distance between people and the EMFs generated by electrical equipment; of particular concern is the design of work spaces in which students and staff use computers.
- Reduce exposure to EMFs when this can be accomplished at no great expense or inconvenience by practicing "prudent avoidance."
- Remove EMF exposure from the school vicinity.
- Require students to maintain a distance of, at least, 40 inches from the back and sides of video display terminals.

State-level Focus:

- Recognize the current limitations of scientific knowledge about electromagnetic fields and their health effects.
- Use restraint in establishing any policy on EMF exposure in light of the lack of concrete evidence to support a policy direction.
- Establish safe EMF exposure levels for children.

HAZARDOUS WASTE

School-level Focus:

- Address hazardous waste management with a "least toxic" approach.
- Develop a removal and prevention plan for hazardous waste.
- Prohibit the use of products that must be managed as hazardous waste on disposal.
- Exercise care in the siting and design of new construction and renovation relating to potential hazardous conditions. The State Education Department should review an environmental assessment report in approving school plans and specifications.

State-level Focus:

- Include the concept of "mutual aid," whereby school districts, on a township, city/county, or regional basis, would provide for emergency accommodation of students from participating mutual aid districts affected by a catastrophic environmental incident.
- Coordinate and unify hazardous waste programs among appropriate State agencies.
- Explore funding sources for hazard mitigation in schools.

INDOOR AIR QUALITY

School-level Focus:

- Educate students, staff and parents as to the importance of good indoor air quality and its effect on individuals, i.e., toxic chemicals, carbon monoxide emissions from buses, fragrances worn by individuals, etc.
- Train school nurses to identify and to document environmental health problems exhibited by children.
- Develop an Indoor Air Quality plan, including engineering details of the heating, ventilation and air-conditioning systems; a detailed log book of the maintenance schedule for the system; and a list of all the cleaning products and pesticides used in the schools. (The log book should be available to State agencies, school personnel, and parents.)
- Designate a person in each school to be responsible for the on-site management of an indoor air quality plan and the logging and reporting of problems to the local school board.
- Establish a "right-to-know" policy for parents and children regarding the materials, chemicals and other substances children are exposed to in school, particularly in the classroom.
- Establish indoor air quality committees, comprised of parents, students, teachers, and staff, to monitor school health and safety concerns.
- Change the practice of sacrificing indoor air quality for energy conservation.
- Investigate every complaint of poor air quality, with the complaint and results fully documented.
- Provide training to custodial and maintenance staff to ensure the proper maintenance of heating, ventilating, and air-conditioning systems.
- Protect school personnel and students with chemical sensitivities from the harassing behavior of others in cases where chemical sensitive individuals are being requested with special equipment or rooms to reduce their discomfort or level of exposure to toxic fumes.
- Ensure for better design, construction, operatio,n and maintenance practices in school facilities.
- Require that power exhaust systems are maintained to ensure for proper ventilation by encouraging the use of auxiliary air filtration devices, particularly in areas where outdoor air quality is poor.
- Establish procurement policies to ensure the reduction of hazardous product and chemical use in schools.
- Establish school-community management teams to review school indoor air quality practices.

State-level Focus:

- Encourage interagency cooperation around indoor air quality issues.
- Establish regulations, guidelines and other administrative procedures that —
  - Ensure that local indoor air quality problems are resolved.
  - Focus on children's physical and developmental needs.
  - Focus on cleaning product use in schools.
  - Mandate school districts to maintain an updated list of all Material Safety Data Sheets (MSDS) in a central location for the public to review. The MSDS should be for cleaning products, art supplies, science department chemicals, swimming pool chemicals, and all other chemicals used in the district.
  - Expand guidelines to address building/classroom temperature, lighting, and humidity.
  - Eliminate smoking from all school buildings, grounds, and events.
  - Require training on Indoor Air Quality for all school personnel.
  - Emphasize child air quality tolerance criteria, maintenance and cleaning chemicals/solvents, and construction and remodeling.
  - Ensure that districts involved in renovations or new construction consider air quality in the building, that administrative and maintenance staff are trained in issues of indoor air quality, and that regular maintenance programs are established for ventilation systems.
  - Recognize specific standards established by credible Federal or State Agencies who are authorized by law to establish such standards when drafting regulations.
- Establish standards on air quality for children.
- Exact penalties and award compensation for children injured due to hazardous exposure.
- Develop a directory to identify schools with reported indoor air quality problems for administrative follow-up.
- Develop an Indoor Air Quality Management Manual.
- Update the Planning Standard Guide to incorporate the latest technologies and standards.
- Designate one school in the State to serve as a model for policy implementation.
- Communicate and collaborate with other State agencies and private sector organizations to avoid duplication of effort and effective implementation of appropriate actions.

- Support N.Y.S. Assembly bill 3603 allowing for the implementation of indoor air quality policies, and N.Y.S. Assembly bill 7139-D eliminating the use of tobacco in schools.
- Establish an Indoor Air Quality Task Force to establish and implement a comprehensive facilities maintenance program, educate school officials about the risks to health and academic potential posed by poor indoor air quality, and conduct routine on-site environmental assessments. The Task Force would be comprised of parents, teachers, community representatives, and consultants with an expertise in environmental assessments.

LEAD

School-level Focus:

- Allow the public to have easy and timely access to information on the lead problem, particularly in the New York City public schools.
- Conduct thorough lead paint testing on playground equipment and soil.
- Test all sources of drinking and cooking water for lead and remediate substandard conditions.
- Couple asbestos removal with lead abatement.
- Prevent situations that exacerbate paint deterioration.
- Follow safety standards for lead-based paint abatement in all New York State schools.
- Place a high priority on school building maintenance and make school custodians accountable for the results.
- Remove lead which poses a risk, and only if it poses a risk.
- Eliminate unhealthy practices affecting children, e.g., exposing children to dust from poor paint removal practices.
- Educate parents, teachers, students, and administrators regarding lead poisoning prevention.
- Abate the lead hazards this summer when fewer children will be in schools.
- Prevent situations that exacerbate paint deterioration, such as leaky roofs and plumbing and structural damage.
- Couple asbestos removal with lead abatement.

State-level Focus:

- Urge the passage of N.Y.S. Senate bill 5159-B and Assembly bill 7964-A, the worker certification and training bills, to set safety and consumer protection standards for lead clean-up.
- Direct the State Education Department to take a prominent role in educating parents, teachers, administrators and children on lead poisoning prevention.
- Provide adequate funding for lead programs in schools.
- Mandate that new students, six years of age and under, be tested for the presence of lead in their blood and that those results be presented with required immunizations records.
- Follow a thorough assessment of the scope of the problem in abatement policy and use available emerging technologies to deal with the problem in a cost effective manner.
- Urge the passage of State Senate Bill 5159-B which would set safety and consumer protection standards for lead cleanup.
- Urge the State Legislature to use the current New York City Health Code requirements as the basis for statewide legislation.
- Establish universal screening for lead-levels for children.

PESTICIDES

School-level Focus:

- Establish effective Integrated Pest Management (IPM) programs.
  - "Integrated Pest Management means an economical and environmentally sensitive approach to pest management which relies on a combination of biological, chemical, cultural and mechanical practices to manage pest populations by the most effective means to prevent unacceptable levels of pest activity and damage, with the least hazard to people, property and the environment." N.Y.S. Senate bill 1092-B and N.Y.S. Assembly bill 4774-C
  - "Integrated Pest Management means an economical and environmentally sensitive approach to pest management which relies on a combination of biological, chemical, cultural and mechanical practices to manage pest populations by the most effective means to prevent unacceptable levels of pest activity and damage with the least hazard to people, property and the environment." N.Y.S. Professional Applications Coalition
  - "IPM is an effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices. IPM program use current, comprehensive information on the life cycle of pests and their interactions with the environment. This information, in combination with available pest control methods, is used to mange pest damage by the most economical means, and with the least possi-

ble hazard to people, property, and the environment. IPM programs take advantage of all pest management options possibly including, but not limited to, the judicious use of pesticides." U.S. Environmental Protection Agency

- Provide children with opportunities for direct experiences in natural, toxic-free environments on a daily basis.
- Use only least toxic pesticides, those that have proven to be safe with children. And adopt a strong, simple, common sense pest control policy urging use of least toxic methods, in consultation with informed parents, teachers, and interested organizations.
- Ecologically balanced programs may be more appropriate, because "least toxic" can be misused and misinterpreted. Factors associated with the ecologically balanced approach include applicator training, facility management training, and the development of programs to disseminate information on specific chemical data.
- Establish an "informed consent policy" where parents and the community are notified of what substances are being sprayed in and around schools.
- Schools should develop a system of posting information and schedules to notify the public when pesticide spraying is occurring.
- Ensure that only certified applicators apply pesticides in schools.
- Prevent the storage of pesticides on school property.
- Require that new school construction be pest-proof.
- Train school personnel in Integrated Pest Management principles.
- Ensure that individuals performing pest control in schools are experts and are familiar with food operations and pest control management.
- Use pesticide spray treatment only if children are not present in school.

State-level Focus:

- Develop standardized bidding language that can be easily used by all school districts on Integrated Pest Management process.
- Amend current health and safety regulations to ensure a healthy school environment for children.
- Provide schools with additional funding and technical assistance to implement an effective pest management system. (BOCES have health and safety officers who could assist school districts in developing such a process. The State Department of Health has training on Integrated Pest Management on video cassette, at no cost.)
- Direct the State Education Department to develop a compendium of successful programs which could be shared with others.
- Establish working relationships among State agencies to collaborate on problems.
- Work with pest management experts before proposing pesticide treatment legislation.

Radon

School-level Focus:

- Test and fix buildings for radon.

State-level Focus:

- Conduct studies and establish administrative procedures that —
  - Focus on determining the extent of the problem in New York State schools.
  - Include the evaluation of all results and cost effective strategies and technologies in radon abatement.
- Verify that schools located in areas with radon levels, as established by the U.S. Environmental Protection Agency, have conducted testing and assessments, and investigate whether those schools have implemented mitigation/abatement procedures.
- Provide funds to schools to mitigate radon problems.
- Encourage schools to participate in the Drew University/New Jersey/Internet Radon Evaluation Program involving elementary students in a survey of radon levels at schools.

Overall Policies

School-level Focus:

- Develop procedures to address emergency situations where children are exposed to dangerous substances.
- Rethink the practice of first dismissals being custodial and maintenance personnel since many building have fallen into disrepair due to the practice.
- Include parents in policy discussions on environmental quality.
- Construct schools with nonporous, durable, cleanable materials, whenever possible. For example, materials such as terrazzo floors and masonry walls, are less likely to emit volatile chemicals than carpeting. Avoid shortsighted economies in school construction which, in the long run, may cost more in terms of rectifying environmental quality inadequacies.

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- Improve school maintenance programs which could potentially decrease costs for maintenance staff and/or supplies.
- Support local ordinances and increased funding for health and safety standards.
- Notify school personnel, students and their families of potential environmental hazards; the media could be used for such purposes.
- Construct new facilities that meet stringent health and safety requirements.
- Identify and address classroom environmental problems, e.g., use water-based markers instead of chalk; avoid rugs; and keep children away from duplication machinery.
- Educate teachers regarding environmental illness and what can and cannot be done in specific situations.
- Designate a person, a student advocate, to assist in implementing the program, to identify problems and to work with parents and other students.
- Respond more quickly to situations in which hazards exist to a child's health.
- Prohibit the use of products that require the use of protective gear for safe use.
- Avoid using products for which Current Intelligence Bulletins (NIOSH) or Permissible Exposure Limits (OSHA) has been issued, except when absolutely necessary, and even then, only in the presence of as few people as possible.
- Provide accessible educational opportunities for children with chemical sensitivities, in the most cost-effective manner.
- Ensure that only competent professionals perform environmental quality reviews.
- Establish school-based environmental management teams which would include parents as fully participating members. These teams should be required to identify, monitor and coordinate efforts to eliminate health hazards, and should also ensure that occupational health and safety rules are uniformly enforced.
- Establish a system of school-based environmental management which would reinforce the accountability and parent involvement tenets of *A New Compact for Learning*.
- Use funding for environmental quality activities differently and for better purposes.
- Link environmental concerns to construction materials and poor practices.
- Attribute environmental problems in schools and communities to political patronage, corruption, fraud, graft, kickbacks, incompetence, and the bureaucracy.
- Emphasize the importance of plaster, paint, and timely maintenance in addressing environmental concerns.
- Decentralize the administration of school maintenance teams in New York City.
- Ensure that only non-toxic supplies are used which have no offensive odors or chemicals.
- Provide children with healthy food from healthy farms.
- Inform parents with chemically sensitive children of the options regarding special education classifications.
- Encourage joint labor-management safety committees at the school-level to address environmental quality problems.

State-level Focus:

- Establish regulations, guidelines, and other administrative procedures that —
  - Require schools to survey all instructional buildings as part of a total environmental audit of school structures.
  - Address emergency situations where children are exposed to dangerous substances.
  - Protect the health and safety of children who already occupy, or who will occupy, the school buildings during construction and renovation.
  - Require that all construction, remodeling, and restoration of any schools or learning facilities, be scheduled during vacations and holidays.
  - Mandate that schools use least toxic materials in and around schools.
  - Develop process by which children, parents, and school personnel can file complaints, if they believe that the school district is in violation of State regulations.
  - Provide guidance to school districts so that students, parents, and school personnel have a clear understanding of what constitutes a safe and healthy environment.
  - Designate organizational units or individuals who will be responsible and accountable for ensuring that schools comply with, and stay in compliance with, adopted policies.
  - Develop mechanisms to adjudicate disputes arising from differing interpretations of adopted policies.
  - Enact strict regulations and legislation and appropriate administrative procedures, with civil and criminal penalties, for nonmaintenance of the school environment.

- Foster the development of holistic facilities plans that address environmental issues as part of ongoing maintenance and repair operations.
- Identify and evaluate school environmental hazards.
- Develop a process for reporting problems by employees and students.
- Ensure timely follow-up after the problem is reported.
- Apply to all school levels.
- Require school districts to establish environmental management plans which include parents in the long-term decision-making processes.
- Allow building-specific plans to address particular problems.
- Require local education agencies to establish school-based environmental management teams comprised of parents and school building administrators to identify, monitor and coordinate efforts to eliminate health hazards.
- Require licensing and certification for environmental health and safety workers.

- Encourage interagency cooperation to address the environmental needs of children.
- Develop and disseminate information on avoiding environmental problems.
- Reexamine current school building codes.
- Develop a "train-the-trainer" program to educate school personnel and other individuals on selecting the most sensible environmental options for their needs.
- Establish clearinghouse and data base on environmental quality issues for distribution to schools.
- Establish a State Office on Environmental Quality to refine policies; to implement programs; to provide technical advice; to prepare and distribute informational and instructional materials; and to provide needed in-service training.
- Establish a permanent State Advisory Committee on Environmental Quality in Schools to research environmental problems; to provide suggestions for regulations and planning; to serve as a resource for school districts with information on problems and ideas for remediation; to develop and implement comprehensive policies to ensure the health and safety of students and school personnel; and to assist the Regents and the State Office of Environmental Quality in designing implementation strategies and developing materials for addressing school-based environmental hazards. The advisory committee should represent all parties affected by or interested in school environmental quality, including those individuals who are already represented on the Regents Advisory Committee — State agencies; the State legislature; school districts and BOCES; statewide educational organizations representing teachers, administrators, rural schools, school business officials and buildings and grounds superintendents; parents; and the New York City Mayor's office — but also be expanded to include other important viewpoints and expertise,i.e., environmental and public health organizations, chemically sensitive individuals, and technically experts drawn from universities or other research institutions who are versed in such issues as integrated pest management and the abatement of toxic contamination in buildings.
- Dedicate State aid funding to address environmental problems and maintenance.
- Support legislation with appropriate funding to ensure health and safety standards.
- Establish "right-to-know" on environmental conditions in schools for students, parents and school personnel.
- Extend occupational to students safety and health rules that currently apply for employees. However, student safety and health safeguards should be adjusted as to age, individual chemical sensitivity and preexisting conditions.
- Concern over extending the occupational right-to-know requirements to students, parents or their legal guardians which could become a burden on schools and school districts.
- Be mindful of the costs involved in implementing new policies and regulations on lead, radon, and indoor air quality as well as requiring schools to perform capital construction and renovation projects when schools are not in session. It may be more feasible to isolate the work areas from the building occupants to prevent exposure.
- Generate a list of products that school districts and architects should avoid using.
- Attention should be focused on rural school districts that may not have the maintenance staff to perform detailed environmental quality procedures.
- Allow local school districts, in conjunction with BOCES Safety/Risk Management office, to resolve environmental issues in their districts, with the State role of offering advice and assistance rather than issuing regulations.
- Focus on enforcement of existing rules and regulations, and avoid making new rules and regulations.
- Establish a task force to inspect all schools, to identify areas of noncompliance, and to issue directives for compliance, while, at the same time, providing technical and financial assistance to such schools.

- Adopt the principle that there are no safe levels of exposure to carcinogens and that their introduction into schools or the failure to remove them from the school environment is unacceptable.
- Update schools about the safest, least-disruptive, most effective way of eliminating a given hazard.
- Publish user-friendly environmental health and safety manuals suitable for use by all members of the school community.
- Develop or assist in developing, training and information materials for administrators, teachers, custodial workers, parents, and other community members.
- Foster information sharing between districts, by establishing a statewide school environmental quality data base giving districts the opportunity to teach each other.
- Include unions in the developing an action plan.
- Post visible warning signs at the site of pesticide or herbicide spraying.
- Make explicit the roles for various agencies.
- Provide separate and targeted resources to implement any new initiative requiring significant expense.
- Gather, analyze, and disseminate information concerning environmental hazards.
- Establish licensing and certification requirements for environmental health and safety workers.
- Establish an information exchange around worker practices, abatement, among others.
- Ensure that competent professionals evaluate each building as to health and safety standards.
- Allow the Commissioner of Education to withdraw an existing certificate of occupancy for environmental health violations. The New York City Board of Education expressed concern that such a regulation would result in confusion, duplication and disruption at the local level.
- Direct the State Education Department to establish guidelines to identify and evaluate school environmental hazards by providing schools the safest, least-disruptive, most cost-effective way to eliminate a given hazard.
- Require the use of international environmental management criteria, as developed under the auspices of the International Organization for Standardization.
- Use independent auditors to evaluate school environmental health and safety practices.
- Require all schools to generate and maintain an environmental handbook, including all investigatory and remedial action.
- Provide more equitable funding for New York City.
- Support U.S. Senate bill 1614, "Better Nutrition and Health for Children Act," to provide $2 million to assist schools in purchasing organically grown foods.

ATTACHMENT

LIST OF PERSONS SUBMITTING TESTIMONY AT THE ENVIRONMENTAL QUALITY IN SCHOOLS PUBLIC HEARINGS

Albany, New York Public Hearing (March 16, 1994)

Timothy Almeida, New York, State Association for Superintendents of Buildings and Grounds

Audubon Council of New York State, National Audubon Society

Dawn Aune, Parent

Monica Aune, Student

Atom Avery, Student

Loretta Avery, Parent

Annie Berthold-Bond, Green Alternatives for Health and Environment

Judy Bertsche, Vice President, Westport PTO

Lucy Billings, Bronx Legal Services

Yael Bloom, NY Public Interest Research Group (NYPIRG)

Pamela Botway, Parent

Wendy Brasure, Teacher, Wilson Central School District

Michael Buccigrossi, United States Environmental Protection Agency

Mary Anne Byrne, Parent

Camilla Calhoun, Westchester PTA

David O. Carpenter, Dean, University at Albany

Terry Chase, Parent

Irmonja Chelaktian, Teacher

Diana Combs, Greenworking Coalitions for the Planet

James Cross, District Superintendent, Cattaraugus-Allegany-Erie-Wyoming BOCES

Liz Cusack, Green Schools, Inc.

David Daignault, Safety Officer, Onondaga-Cortland Madison BOCES

Doris Delaney, P.R.O.T.E.C.T.

Angela DeVito, Long Island Occupational and Environmental Health Center

The Honorable Thomas P. DiNapoli, Member of the New York State Assembly

Mary Ellen Dowling, Health Systems Agency of Northeastern New York

Marilyn DuBois, New York State Department of Environmental Conservation

Bryna Eill, New York Coalition for Alternatives to Pesticides

Alice Farber, Art Teacher

Elsa Ford, Chair, Brentwood/Bay Shore Breast Cancer Coalition

Peggy Francisco, Parent

Tracy Frisch, New York Coalition for Alternatives to Pesticides

Paul Giardina, United States Environmental Protection Agency

Lin Ramsey Golash, CNYCOSH

Cherie L. Griffith, Parent and Teacher

Elizabeth Gundlich, Chair, South Country PTA

Ashok Gupta, Senior Energy Analyst, Natural Resources Defense Council

Jeffrey Hahn, Superintendent, Laurens Central School District

Leon Hall, New York State Electric and Gas Corporation

Jackiette Hicks, Parent

Edwina Hill, Parent

Thomas Hobart, Jr., President, New York State United Teachers

Geraldine Hogan, Fulton IAQ Task Force

Ken Hooper, New York State Electric and Gas Corporation

Jane Howat, Vice President, Congers Elementary PTA

Peter Iwanowicz, American Lung Association

Thomas Jerram, Thomas Associates, P.C.

Margaret Jungquist, Teacher

Colin Kaufman, Esq.

Richard Kaufman, Chappaqua PTA Environmental Committee

Alice Kaswan, Berle, Kass, and Case

Galen Kirkland, Executive Director, Advocates for Children of New York

Donna Knapp, Teacher, Vestal Central School District

Bette Koch, Parent

Norman Koslofsky, Superintendent, Westport Central School District

Louise Kosta, PENN-YORK HEAL

Denise Laino, Parent

Arthur Lange, Orange-Ulster BOCES

Robert Lavery, State Education Department

The Honorable Mimi Levin Lieber, Member New York State Board of Regents

Amy Linden, Chief Executive for School Facilities, New York City Board of Education

LIST OF PERSONS SUBMITTING TESTIMONY

March 16, 1994 *Continued*

Lynn Lyons, Fulton IAQ Task Force

Linell Machold, Parent, Hazardous Waste Director SUNY Utica/Rome

Carol Madonna, Parent

Jonathan Madonna, Student

John Martin, Student

Nancy Martin, Parent

Frank A. Mauro, Superintendent, Brentwood Union Free School District

Alan R. McCartney, Superintendent, Voorheesville Central School District

William J. McDonald, Superintendent, Floral Park-Bellerose Union Free School District

Marilyn Mohr, Parent

Brenda R. Muller, Former Teacher, Rochester City School District

National Audubon Society, Audubon Council of New York

Alexander Nossek, First Option Regular Education (F.O.R.E.)

James J. O'Connell, New York State Council of School Superintendents

Brandon Ogbunugafor, Student

Candice Ogbunugafor, Student

Fanny Ogbunugafor, Parent

Donna Osborne, Fulton IAQ Task Force

David Owlett, Cattaraugus-Allegany BOCES

Glen Patrick, Disabled Teacher

Gene Piasecki, Fulton IAQ Task Force

Peter Pirnie, Cayuga-Onondaga BOCES

Anne Rabe, Executive Director, Citizens Environmental Coalition

Kara Lynn Reed, Middle School Counselor

Carol Rinere, Genesee-Livingston-Steuben Wyoming BOCES

Ken Scallon, American Lung Association

Walter D. Schroeder, New York State Professional Applicators Coalition

Donna E. Seymour, Potsdam PTA Safety Committee

Anne M. Sheehan, Parent, Executive Editor, *The Chatham Courier*

Cheryl Shaw, Teacher, Wilson Central School District

William Shine, Superintendent, Great Neck Public Schools

Donald Singer, New York State Federation of School Administrators

Marilyn Sweeney, Parent

Linda Thurlon, School Employee

Domenick Uzzi, New York State Federation of School Administrators

Gary Van Valkenburgh, New York State Pest Control Association

Virginia D. Weeks, M.D.

Christopher Wendt, Board President, Wantagh Union Free School District

Westport Central School District

Western New York Council on Occupational Safety and Health

Rodney Whalen, New York State United Teachers

Mary Ellen White, Health and Safety Committee, Albany City School District

Irene Ruth Wilkenfeld, Safe Schools, Granger, IN.

Wayne Williams, Superintendent, William Floyd Union Free School District

Steve Willner, Principal, South Country Central Schools, Frank P. Long Intermediate School

Albin Winckler, Spouse

Patricia Winckler, Teacher

Michael A. Wolfson, M.D., Central New York Occupational Health Clinical Center

Eileen Zambetti, M.D., Advisory Council on Environmental Conservation of Scarsdale

NEW YORK, NEW YORK, PUBLIC HEARING (May 12, 1994)

Linda C. Aniello, Parent

Philip Berns, Bronx Legal Services

Dan Dickerson, Director, New York City Board of Education Pest Control

Mary DiServio, Teacher, Murry Bergtraum High School

Michelle Goldberg, Parent

The Honorable Howard Golden, President, Borough of Brooklyn

Ashok Gupta, Senior Energy Analyst, Natural Resources Defense Council

Catherine Hughes, Legislative Advocate, NY Public Interest Research Group (NYPIRG)

William S. Kerbel, American Industrial Hygiene Association

May 12, 1994 *Continued*

Galen Kirkland, Executive Director, Advocates for Children of New York

Amy Linden, Chief Executive for School Facilities, New York City Board of Education

Marta Milchman, Environmental Chair, Long Island Coalition for Alternatives to Pesticides

Mothers and Others For A Livable Planet, New York, New York

Martin Rosenman, Teacher, Murry Bergtraum High School

Lydia Saltzman, Parents Against Lead in Schools

Alan Stieb, Concerned Citizen

Edward Swoszowski, Consultant

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